UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 1
5 Post Office Square, Suite 100
Boston, MA 02109-3912

May 16, 2013

Patricia W. Aho, Commissioner
Maine Department of Environmental Protection
17 State House Station
Augusta, ME 04333-0017

Re: Review and Action on Water Quality Standards Revisions

Dear Commissioner Aho:

By letter of January 14, 2013, the Maine Department of Environmental Protection ("DEP") submitted revisions of the State's surface water quality standards to Region 1 of the United States Environmental Protection Agency ("EPA" or "Region") for review. The revisions were adopted by the DEP on July 13, 2012. By letter to EPA dated January 9, 2013, Maine's Assistant Attorney General in the Natural Resources Division certified the revisions as having been duly adopted pursuant to state law. The Region has completed its review of the submitted revisions to the arsenic criteria as further described below.

Pursuant to Section 303(c)(2) of the Clean Water Act and 40 C.F.R. Part 131, I hereby approve the following water quality standards revisions to 38 MRSA §420, sub-§2 as set forth in P.L. 2011, Ch. 194 (LD 515) "An Act To Review State Water Quality Standards" and CMR 584, Surface Water Quality Criteria for Toxic Pollutants.

1. Revision of the cancer risk level used to calculate the human health criteria for arsenic from one in 1,000,000 to one in 10,000 and
2. Revision of the arsenic criteria to protect human health from 0.012 to 1.3 µg/L for the consumption of water and organisms and from 0.028 to 3.7 µg/L for the consumption of organisms only.

We are still reviewing revisions to the acrolein and phenol criteria and are not taking action on those revisions at this time.

EPA acknowledges your request to approve the revisions for all waters, including waters that are within Indian territories. Today's approval does not extend to waters that are within Indian territories. EPA intends to publish a notice explicitly seeking public input on the applicability of the revised arsenic criterion in question to waters within Indian territories before completing its review. Therefore, EPA is taking no action to approve or disapprove the State's revisions with respect to those waters at this time. In the meantime, EPA will retain responsibility under Sections 303(c) and 303(d) of the Clean Water Act for those waters.

Discussion

In implementing LD 515, DEP reviewed the available scientific literature on the factors that are used to derive water quality criteria to protect human health uses including fishing, recreation in and on the water, and, where applicable, drinking water. DEP also reviewed data specific to waters in Maine and used the information to derive arsenic criteria for Maine's waters.

Arsenic is a known carcinogen that may cause cancer in skin or internal organs such as the liver, lungs and bladder.[1] In its 304(a) criteria recommendations, EPA states that arsenic criteria should be applied as inorganic arsenic.[2] As is the case for all pollutants, EPA's 2000 Human Health Methodology encourages states to use local and regional data when making risk management decisions inherent in developing criteria, including decisions inherent in selecting the appropriate fish consumption rate, target risk level and bioaccumulation factor.[3]

Maine's revised numeric criteria for arsenic were derived using the same general methodology and equations used to calculate EPA's current 304(a) recommended criteria for carcinogens. The revised criteria and the input variables used to calculate the criteria are summarized in Table 1 below. The paragraphs that follow explain those components of the calculation that have been revised to form the basis of Maine's new arsenic criteria.

Cancer Risk Factor (RF): The State of Maine enacted LD 515 in 2011 directing DEP to revise Maine's human health water quality criteria for arsenic based on a cancer risk factor of 1 in 10,000 rather than the previous RF of 1 in 1,000,000. EPA's recommended methodology for the derivation of water quality criteria states that 1 in 1,000,000 or 1 in 100,000 may be acceptable cancer risk factors for the general population and that highly exposed populations should not exceed a 1 in 10,000 risk level.[4]

Fish Consumption Rate (FCR): Maine's previous 32.4 g/day FCR represents the 94th percentile for Native American anglers in Maine and the 95th percentile for the total angler population in Maine, based on data from a 1990 survey of licensed Maine anglers[5]. In deriving the new arsenic criteria, DEP used 138 g/day, which is the 99th percentile of this survey, to ensure that the criteria are protective of subsistence fishers, a highly exposed population. This approach is consistent with EPA recommendations for

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[1] Agency for Toxic Substances and Disease Registry (ATSDR). *Toxicological Profile for Arsenic.* Atlanta, Georgia, August 2007. Available at: http://www.atsdr.cdc.gov/substances/toxsubstance.asp?toxid=3

[2] EPA, *National Recommended Water Quality Criteria,* human health criteria for arsenic published 1992, available at: http://water.epa.gov/scitech/swguidance/standards/criteria/current/index.cfm

[3] 84 EPA. 2000. *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health.* U.S. Environmental Protection Agency, Office of Water, Washington, D.C. EPA-822-B-00-004. page 2-6. Available at: http://www.epa.gov/waterscience/criteria/humanhealth/method/complete.pdf

[4] EPA. 2000. *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health.* U.S. Environmental Protection Agency, Office of Water, Washington, D.C. EPA-822-B-00-004. page 2-6. Available at: http://www.epa.gov/waterscience/criteria/humanhealth/method/complete.pdf

[5] Ebert, E.S., R.E. Keenan, J.W. Knight, and N.W. Harrington, *Consumption of Freshwater Fish by Maine Anglers,* proceedings of the 1992 TAPPI Environmental Conference.

Table 1 – Comparison of Maine's Previous and Revised Arsenic Criteria

Parameter	2005 criteria	2012 criteria
Cancer Risk Factor (RF)	1×10^{-6}	1×10^{-4}
Body Weight (BW)	70 kg	70 kg
Cancer Potency Factor (q1*)	1.75 mg/kg/day	1.75 mg/kg/day
Water Consumption (DW)	2 L/day	2 L/day
Bioconcentration Factor (BCF)	44 L/kg	26 L/kg
Fish Consumption Rate (FCR)	32.4 g/day	138 g/day
Inorganic Factor (IF)	none[6]	30%
Criteria to protect human health for consuming fish and drinking water (water + organism) $=1{,}000 \times \frac{RF \times BW}{q1^* \times [DW + (BCF \times FCR \times IF)]}$	0.012 µg/L	1.3 µg/L
Criteria to protect human health for consuming fish only $=1{,}000 \times \frac{RF \times BW}{q1^* \times BCF \times FCR \times IF}$	0.028 µg/L	3.7 µg/L

estimating fish consumption rates for subsistence fishers and is appropriate to ensure that highly exposed subpopulations are not exposed to a risk level greater than 1 in 10,000.

Inorganic Factor (IF): Arsenic is present in the environment and in fish tissue in both organic and inorganic forms. Inorganic arsenic is the form that is most toxic to humans and used to develop toxicity data for cancer and other end points. The IF is the ratio of inorganic arsenic to total arsenic in fish tissue. DEP conducted its own literature search which found a range of observed IF values from 10 to 30%. According to DEP's review, the lower end of this range is based on average results, whereas maximum amounts are observed to approach or exceed the upper end of the range depending on species and other factors. DEP chose the more protective end of this range.[7]

Bioconcentration Factor (BCF): Bioconcentration refers to the uptake and retention of a chemical by an aquatic organism from water. The BCF is the ratio of the concentration of a substance in the tissue of an aquatic organism to its concentration in the ambient water in situations where the organism is exposed through the water only and the ratio does not

[6] The 2005 criteria did not include adjustment to the criteria based on an assumption of a ratio of inorganic to total arsenic. Therefore, IF was not included in the 2005 calculation. Instead, DEP assumed a ratio of 50% inorganic arsenic to total arsenic in developing water quality based effluent limits for dischargers subject to licensing under Maine's National Pollution Discharge Elimination System. EPA understands that with the adoption of the new arsenic criteria, DEP will no longer make those adjustments.

[7] *See* 1/27/2011 email from Robert D. Stratton, DEP, to Ellen Weitzler and Stephen Silva, EPA.

change substantially over time. Maine has updated the BCF used for the arsenic criteria based on a 2011 BCF derivation for arsenic conducted by EPA in support of an arsenic criteria revision in Oregon.[8] The 2011 derivation used a larger set of studies than were available in 1980 when the 44kg/L BCF (used in the 2005 Maine arsenic criteria) was developed.

EPA approves of the WQS revision to the arsenic criteria on the basis of the demonstrated use of available sound science, including state specific data, to derive the new criteria.

We look forward to continued cooperation with Maine in the development, review and approval of water quality standards pursuant to our responsibilities under the Clean Water Act. Please contact Ellen Weitzler (617-918-1582) if you have any questions.

Sincerely,

Kenneth Moraff, Acting Director
Office of Ecosystem Protection

cc: Brian Kavanah, MEDEP
Tracy Bone, EPA SSB
Jennie Bridge, EPA

[8] EPA, Region 10, *Technical Support Document for Action on the State of Oregon's New and Revised Human Health Water Quality Criteria for Toxics and Associated Implementation Provisions Submitted July 12 and 21, 2011*, October 17, 2011

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

PAUL R. LEPAGE
GOVERNOR

PATRICIA W. AHO
COMMISSIONER

January 14, 2013

Curt Spalding, Regional Administrator
EPA New England, Region 1
5 Post Office Square - Suite 100
Boston, MA 02109-3912

RE: USEPA Review of P.L. 2011, Ch. 194 and revised 06-096 CMR 584

Dear Mr. Spalding,

Enclosed are materials concerning changes to water quality standards administered by the Bureau of Land and Water Quality of the Maine Department of Environmental Protection (MDEP). These materials are provided for EPA's review as required by 33 U.S.C. § 1313(c). This packet includes:

- A list of recent changes to statutes and rules.
- A memo providing information concerning these changes.
- Copies of the chapters and rules described in this packet.
- Copies of other supporting documentation relating to these changes.
- A letter from Gerald D. Reid of the Maine Attorney General's Office certifying that the statutory changes affecting water quality standards were duly adopted pursuant to state law.

We look forward to EPA's timely review and action, pursuant to 40 CFR § 131.21, which provides in part that:

(a) After the State submits its officially adopted revisions, the Regional Administrator shall either:
(1) Notify the State within 60 days that the revisions are approved, or
(2) Notify the State within 90 days that the revisions are disapproved. Such notification of disapproval shall specify the changes needed to assure compliance with the requirements of the Act and this regulation, and shall explain why the State standard is not in compliance with such requirements. Any new or revised State standard must be accompanied by some type of supporting analysis.

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In recent years, EPA's approval of new or revised water quality standards in Maine has included language to the effect that the approval "does not extend to waters that are within Indian territories and lands." Although it should not be necessary, by this letter I am expressly requesting that EPA approve the enclosed water quality standards as effective throughout the State of Maine without distinction as to waters within Indian territories or lands. There is no basis in the law for such a distinction, as Maine's environmental regulatory jurisdiction is uniform throughout the State, including as to lands and waters that EPA might consider to be Indian. *Maine v. Johnson*, 498 F.3d 37, 43 (1st. Cir. 2007) (Maine Indian Land Claims Settlement Act, and particularly the Maine Implementing Act at 30 M.R.S. § 6204, is "about as explicit as is possible" in conferring environmental regulatory authority over Indian lands and waters on the State).

To the extent EPA does anything other than approve the enclosed standards in the unconditional manner requested, I hereby request that EPA:

-Identify with specificity each water body or segment thereof to which EPA contends the enclosed standards do not apply because they are waters "within Indian territories and lands"; and
-Explain with specificity what water quality standards, if any, EPA contends are applicable to such water bodies or segments thereof, and the legal basis for that conclusion.

As I am sure you can appreciate, if it is indeed EPA's position that Maine's duly adopted water quality standards do not apply to some subset of waters within the State, then both MDEP and Maine's regulated community are entitled to clear answers to these questions from your agency.

Thank you for your assistance in this matter. Please contact Mark Margerum (207-287-7842) if you have any questions or concerns as soon as is reasonably possible.

Sincerely,

Patricia W. Aho, Commissioner

cc: Mick Kuhns, Director, Bureau of Land and Water Quality;
Brian Kavanah, Director, Division of Water Quality Management
Don Witherill, Director, Division of Environmental Assessment
Susanne Meidel, Water Quality Standards Coordinator, DEA
Jan McClintock, Assistant Attorney General
Gerald D. Reid, Assistant Attorney General, Chief, Natural Resources Division
Ellen Weitzler, USEPA Region 1
Steve Silva, USEPA Region 1
Dave Webster, USEPA Region 1
Bob Stratton, Maine Department of Inland Fisheries and Wildlife

List of Changes to Maine's Water Quality Standards ("The Docket")

2011-2012 Legislative Session (PL 2011) Statutory Changes

P.L. 2011, Ch. 194 (LD 515). An Act to Review State Water Quality Standards.
Effective September 28, 2011.

Description: Section 2 of Chapter 194 changes Maine's water quality standards by amending Title 38 MRSA §420, sub-§2, adding a new paragraph J which directs the DEP to use a one in 10,000 risk level when calculating ambient water quality criteria for inorganic arsenic. Chapter 194 also adds a new provision for mercury testing for facilities (Title 38 MRSA §420, sub-§1-B, ¶F), and provides language regarding waste discharge licenses (Title 38 MRSA §464, sub-§4, ¶¶J and K).

Public Hearing:	Tuesday, April 16, 2011, 1:00 pm, Cross Building Room 216
Work sessions:	Tuesday, May 3, 2011, 1:00 pm, Cross Building Room 216
	Wednesday, May 11, 2011, 1:00 pm, Cross Building Room 216

2012 Rulemaking

06-096 CMR 584, Surface Water Quality Criteria for Toxic Pollutants.
Effective July 29, 2012.

Description: This rule revision changes the cancer risk level for inorganic arsenic used in calculating ambient water quality (human health) criteria and establishes revised inorganic arsenic criteria accordingly. Further, this revision updates Maine's ambient water quality and human health criteria for pollutants for which USEPA has updated criteria since Maine's last revision in 2005, using Maine-specific parameters where applicable

Public Hearing: November 1, 2011, 9:30 am, DEP Response Services Training Room
Written Public Comment Periods: November 1 – December 1, 2011; March 14 – April 13, 2012

Notes: The list of statutory and regulatory amendments above is based on Department legislative and rulemaking records, as well as a review of the most recent cross-reference tables published by the Maine Legislature, available at their website and published in the Laws of the State of Maine, through 2011, Volume 3.

Rulemaking hearings are noticed on the Maine Secretary of State's website, on the DEP's website, by mail and email notice to subscribers to the DEP's rulemaking notice list, and by publication in the legal notices of the Bangor Daily News, Lewiston Sun Journal, Kennebec Journal and Portland Press Herald.

Maine Department of Environmental Protection
Memorandum Describing Recent Changes to Maine's Water Quality Standards
January 14, 2013

2011-2012 Legislative Session (PL 2011) Statutory Changes

P.L. 2011, Ch. 194 (LD 515). An Act to Review State Water Quality Standards.
Effective September 28, 2011.

Section 2 of Chapter 194 changes Maine's water quality standards by amending Title 38 MRSA §420, sub-§2, adding a new paragraph J which directs the DEP to use a one in 10,000 risk level when calculating ambient water quality criteria for inorganic arsenic. The Department has implemented this change through the amendment of the Department's rules, Chapter 584, Surface Water Quality Criteria for Toxic Pollutants, as described below.

Chapter 194 also makes changes to testing requirements and other licensing requirements for discharge permits. Section 1 of Chapter 194 provides the Department the ability to reduce mercury testing for discharges if there is at least five years of test data. Section 3 of Chapter 194 adds two new paragraphs to Title 38 MRSA §464, sub-§4. The first allows the Department flexibility in the use of any allocation set aside for future growth, such as the water quality reserve specified in Department Regulation Chapter 530, Surface Water Toxics Control Program, when calculating discharge limits for toxics. The second paragraph added by Section 3 specifies that permit limitations for metals be established only as mass based limits.

Enclosed are the following exhibits relating to P.L. 2011, Ch. 194 (LD 515), An Act to Review State Water Quality Standards:

Ex. 1 Marked up version of PL 2011, Chapter 194, as enacted by the Maine Legislature
Ex. 2 Clean Copy of M.R.S.A. Title 38, Section 420
Ex. 3 Clean Copy of M.R.S.A. Title 38, Section 464
Ex. 4 Public Comments submitted at legislative hearing
Ex. 5 Certification by the Maine Attorney General's Office that the law was duly adopted pursuant to state law

2012 Rulemaking

06-096 CMR 584, Surface Water Quality Criteria for Toxic Pollutants.
Effective July 29, 2012.

The July 29, 2012 amendments to the Department's Chapter 584 rule implements the risk level established by P.L. 2011, c. 194, which is listed above. This rule revision changes the cancer risk level for inorganic arsenic used in calculating ambient water quality (human health) criteria and establishes revised inorganic arsenic criteria accordingly. Further, this revision updates Maine's ambient water quality and human health criteria for pollutants for which USEPA has updated criteria since Maine's last revision in 2005, using Maine-specific parameters where applicable.

Revisions to Chapter 584 were initiated pursuant to P.L. 2011, c. 194, An Act to Review State Water Quality Standards, signed into law by the Governor on June 1, 2011. Over the next several months, MEDEP held numerous meetings and communications with USEPA and the Maine Department of Health and Human Services' Division of Environmental Health to address the requirements of P.L. 2011, c. 194

to ensure that the Department's actions would comply with the requirements of the Federal Clean Water Act and our mandates under state water quality law.

On September 14, 2011, MEDEP provided the Notice of Agency Rulemaking Proposal and the Rulemaking Fact Sheet for proposed changes to Chapter 584 to those facilities currently participating in the Department's toxics program, individuals who have expressed interest in either this specific rulemaking effort or Department rulemaking in general, state and federal agencies (including EPA) and other parties typically involved in the review of draft Maine Pollutant Discharge Elimination System Permit and Maine Waste Discharge Licenses for waters of the State of Maine.

On September 16, 2011, The Notice of Agency Rulemaking Proposal for Chapter 584 was published in statewide newspapers pursuant to the requirements of 40 CFR §25.5.

On September 20, 2011, MEDEP provided copies of the existing Chapter 584 with proposed changes indicated to the above group of interested parties. Shortly thereafter, the proposed rule was placed on the Department's website.

On October 4, 2011, the proposed rule was submitted to the Maine Secretary of State's Office and on October 12, 2011, the Notice of Agency Rulemaking Proposal for Chapter 584 was published in statewide newspapers pursuant to the requirements of the Maine Administrative Procedures Act.

Pursuant to Maine Law, 38 M.R.S.A., Section 341-H, the Department of Environmental Protection conducted a public hearing regarding this rule on November 1, 2011, in Augusta, Maine. The record for written comments remained open until 5:00 pm on December 1, 2011. The Department reviewed all oral and written comments received, including those from USEPA. In response to evidence received at the hearing and written comments received from interested parties, the Department prepared a written Response to Comments and proposed additional changes that resulted in a proposed rule that differed considerably from the Department's initial proposal.

On March 13, 2012, MEDEP provided copies of the existing Chapter 584 with both initial and newly proposed changes indicated to the above group of interested parties.

On March 14, 2012, pursuant to the Maine Administrative Procedure Act, 5 MRSA, §8052(5), the Department reposted the proposed rule for comments from the public concerning the changes from the initial proposed rule. The second comment period remained open until 5:00 pm on April 13, 2012. The Department reviewed all comments received and subsequently prepared a written Response to Comments. On June 12, 2012, the Basis Statement, Response to Comments, and proposed revised Chapter 584 were placed on the Department's website and provided to parties who previously submitted comments.

Pursuant to 38 M.R.S.A., Section 341-H(3)(C), on June 12, 2012, the Department of Environmental Protection provided notice of and, on June 19, 2012, conducted a public meeting for the purpose of receiving additional limited public comment on this rule. No additional public comments were received.

The Maine Rule 06-096 CMR 584 amendments were adopted by the Commissioner of the Maine Department of Environmental Protection on July 13, 2012, and approved as to form and legality by the Assistant Attorney General on July 16, 2012. The Rule amendments were filed with the Maine Secretary of State which assigned an effective date of July 29, 2012, in accordance with the Maine Administrative Procedures Act.

Enclosed are the following exhibits relating to 06-096 CMR 584, Surface Water Quality Criteria for Toxic Pollutants:

Ex. 6 Marked-up copy of the rule
Ex. 7 Final copy of the rule
Ex. 8 Technical/scientific basis statement, including public comments received in the rulemaking process and MDEP's responses to those comments
Ex. 9 Copy of the public notice for the public hearing related to the rule revision (2 documents)
Ex. 10 Certification by the Maine Attorney General's Office that the rule was duly adopted pursuant to state law

APPROVED CHAPTER

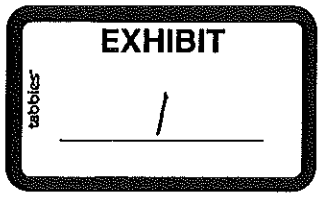
JUN 0 1 '11 194

BY GOVERNOR PUBLIC LAW

STATE OF MAINE

IN THE YEAR OF OUR LORD

TWO THOUSAND AND ELEVEN



S.P. 148 - L.D. 515

An Act To Review State Water Quality Standards

Be it enacted by the People of the State of Maine as follows:

Sec. 1. 38 MRSA §420, sub-§1-B, ¶F is enacted to read:

F. The department may require mercury testing once per year for facilities that maintain at least 5 years of mercury testing data.

Sec. 2. 38 MRSA §420, sub-§2, ¶J is enacted to read:

J. Notwithstanding any other provision of law to the contrary, the department shall use a one in 10,000 risk level when calculating ambient water quality criteria for inorganic arsenic.

Sec. 3. 38 MRSA §464, sub-§4, ¶¶J and K are enacted to read:

J. For the purpose of calculating waste discharge license limits for toxic substances, the department may use any unallocated assimilative capacity that the department has set aside for future growth if the use of that unallocated assimilative capacity would avoid an exceedance of applicable ambient water quality criteria or a determination by the department of a reasonable potential to exceed applicable ambient water quality criteria.

K. Unless otherwise required by an applicable effluent limitation guideline adopted by the department, any limitations for metals in a waste discharge license may be expressed only as mass-based limits.

38 §420. CERTAIN DEPOSITS AND DISCHARGES PROHIBITED

38 §420. CERTAIN DEPOSITS AND DISCHARGES PROHIBITED

No person, firm, corporation or other legal entity shall place, deposit, discharge or spill, directly or indirectly, into the ground water, inland surface waters or tidal waters of this State, or on the ice thereof, or on the banks thereof so that the same may flow or be washed into such waters, or in such manner that the drainage therefrom may flow into such waters, any of the following substances: [1989, c. 890, Pt. A, §40 (AFF); 1989, c. 890, Pt. B, §37 (AMD).]

1. Mercury.

[1999, c. 500, §1 (RP) .]

1-A. Mercury.

[2001, c. 418, §2 (RP) .]

1-B. Mercury. Facilities discharging mercury into the waters of the State shall make reasonable progress to develop, incorporate and continuously improve pollution prevention practices, and implement economically achievable future improvements in wastewater technology, in order to reduce their dependence upon mercury products, reduce or remove discharges of mercury over time, and help in the restoration of the waters of the State. This subsection establishes ambient water quality criteria for mercury that identify that level of mercury considered safe for human health and the environment.

A. The ambient criteria for mercury are as follows:

(1) Ambient water quality criteria for aquatic life:

(a) Freshwater acute: 1.7 micrograms per liter;

(b) Freshwater chronic: 0.91 micrograms per liter;

(c) Saltwater acute: 2.1 micrograms per liter; and

(d) Saltwater chronic: 1.1 micrograms per liter; and

(2) Fish tissue residue criterion for human health: 0.2 milligrams per kilogram in the edible portion of fish. [2001, c. 418, §3 (NEW).]

B. A facility is not in violation of the ambient criteria for mercury if:

(1) The facility is in compliance with an interim discharge limit established by the department pursuant to section 413, subsection 11; or

(2) The facility is in compliance with a remediation or corrective action plan, license or order approved either by the department pursuant to section 1301, 1304, 1319, 1364 or 1365, or by the United States Environmental Protection Agency under federal law with the concurrence of the department. [2001, c. 418, §3 (NEW).]

C. The department may establish a site-specific bioaccumulation factor for mercury when there is sufficient information to indicate that a site-specific bioaccumulation factor will be protective of human health and wildlife. A site-specific bioaccumulation factor may only be established:

(1) As part of a licensing proceeding pursuant to section 413 by the board; or

(2) As part of a remediation or corrective action plan, license or order approved either by the department pursuant to section 1301, 1304, 1319, 1364 or 1365, or by the United States Environmental Protection Agency under federal law with the concurrence of the department. [2001, c. 418, §3 (NEW).]

D. The department shall establish by rule a statewide bioaccumulation factor protective of 95% of the waters of the State based upon data of acceptable quality and representing the species consumed by the public following guidelines published by the United States Environmental Protection Agency. Rules adopted pursuant to this paragraph are major substantive rules as defined in Title 5, chapter 375, subchapter II-A. [2001, c. 418, §3 (NEW).]

E. The department shall establish by rule statewide ambient water quality criteria for mercury concerning wildlife based upon data of acceptable quality from the State or the United States Environmental Protection Agency. Rules adopted pursuant to this paragraph are major substantive rules as defined in Title 5, chapter 375, subchapter II-A. [2001, c. 418, §3 (NEW).]

F. The department may require mercury testing once per year for facilities that maintain at least 5 years of mercury testing data. [2011, c. 194, §1 (NEW).]

The commissioner shall report to the joint standing committee of the Legislature having jurisdiction over natural resources matters by January 15, 2005 and by January 15th every 5th year thereafter on the status of mercury discharges, progress in implementing pollution prevention plans and progress toward attainment of ambient water quality criteria for mercury under this subsection. The report may include proposed statutory amendments. The joint standing committee of the Legislature having jurisdiction over natural resources matters may report out any necessary implementing legislation related to these mercury issues in each session in which a report is required under this subsection.

[2011, c. 194, §1 (AMD) .]

2. Toxic or hazardous substances. Any other toxic substance in any amount or concentration greater than that identified or regulated, including complete prohibition of such substance, by the board. In identifying and regulating such toxic substances, the board shall take into account the toxicity of the substance, its persistence and degradability, the usual or potential presence of any organism affected by such substance in any waters of the State, the importance of such organism and the nature and extent of the effect of such substance on such organisms, either alone or in combination with substances already in the receiving waters or the discharge. As used in this subsection, "toxic substance" shall mean those substances or combination of substances, including disease causing agents, which after discharge or upon exposure, ingestion, inhalation or assimilation into any organism, including humans either directly through the environment or indirectly through ingestion through food chains, will, on the basis of information available to the board either alone or in combination with other substances already in the receiving waters or the discharge, cause death, disease, abnormalities, cancer, genetic mutations, physiological malfunctions, including malfunctions in reproduction, or physical deformations in such organism or their offspring.

A. Except as naturally occurs or as provided in paragraphs B and C, the board shall regulate toxic substances in the surface waters of the State at the levels set forth in federal water quality criteria as established by the United States Environmental Protection Agency pursuant to the Federal Water Pollution Control Act, Public Law 92-500, Section 304(a), as amended. [1989, c. 856, §2 (NEW); 1989, c. 856, §7 (AFF).]

B. The board may change the statewide criteria established under paragraph A for a particular toxic substance established pursuant to the Federal Water Pollution Control Act, Public Law 92-500, Section 304(a), as amended, as follows:

(1) By adopting site-specific numerical criteria for the toxic substance to reflect site-specific circumstances different from those used in, or any not considered in, the derivation of the statewide criteria. The board shall adopt site-specific numerical criteria only as part of a licensing proceeding pursuant to sections 413, 414 and 414-A; or

(2) By adopting alternative statewide criteria for the toxic substance. The alternative statewide criteria must be adopted by rule.

The board may substitute site-specific criteria or alternative statewide criteria for the criteria established in paragraph A only upon a finding that the site-specific criteria or alternative statewide criteria are based on sound scientific rationale and are protective of the most sensitive designated use of the water body, including, but not limited to, human consumption of fish and drinking water supply after treatment. [1989, c. 856, §2 (NEW); 1989, c. 856, §7 (AFF).]

C. When surface water quality standards are not being met due to the presence of a toxic substance for which no water quality criteria have been established pursuant to the Federal Water Pollution Control Act, Section 304(a), as amended, the board shall:

(1) Adopt statewide numerical criteria by rule; or

(2) Adopt site-specific numerical criteria as part of a licensing proceeding under sections 413, 414 and 414-A.

Nothing in this section restricts the authority of the board to adopt, by rule, statewide or site-specific numerical criteria for toxic substances that are not presently causing water quality standards to be violated. [1989, c. 856, §2 (NEW); 1989, c. 856, §7 (AFF).]

D. For any criteria established under this subsection, the board shall establish the acceptable level of additional risk of cancer to be borne by the affected population from exposure to the toxic substance believed to be carcinogenic. [1989, c. 856, §2 (NEW); 1989, c. 856, §7 (AFF).]

E. In regulating substances that are toxic to humans, including any rulemaking to regulate these substances, the board shall consider any information provided by the Department of Health and Human Services. [1989, c. 856, §2 (NEW); 1989, c. 856, §7 (AFF); 2003, c. 689, Pt. B, §6 (REV).]

F. The Department of Health and Human Services may request that the board adopt or revise the statewide or site-specific criteria for any toxic substance based on the need to protect public health. If the request is filed with the board, the board may propose a rule and initiate a rule-making proceeding. The board shall incorporate in its proposal for rulemaking under this paragraph the statewide or site-specific criteria recommended by the Department of Health and Human Services. [1989, c. 856, §2 (NEW); 1989, c. 856, §7 (AFF); 2003, c. 689, Pt. B, §6 (REV).]

G. Numeric water quality criteria for 2, 3, 7, 8 - tetrachlorodibenzo-p-dioxin established by the United States Environmental Protection Agency under the Federal Water Pollution Control Act, Public Law 92-500, Section 304(a), as amended, do not apply until June 1, 1991, and only apply on that date if the board has not adopted through rulemaking or individual licensing proceedings under this section alternative numeric water quality criteria for 2, 3, 7, 8 - tetrachlorodibenzo-p-dioxin. Pursuant to section 414-A, subsection 2, the board shall establish schedules for compliance with criteria established under this section. These schedules must be consistent with the compliance deadlines established under the Federal Water Pollution Control Act, Public Law 92-500, Section 304(l), as amended. [1989, c. 856, §2 (NEW); 1989, c. 856, §7 (AFF).]

H. Notwithstanding paragraphs D and G, the board may not adopt any numeric water quality criteria for, or acceptable level of additional cancer risk from exposure to, 2, 3, 7, 8 - tetrachlorodibenzo-p-dioxin prior to January 1, 1994. [1993, c. 240, §1 (NEW).]

I. Notwithstanding any other provision of this section, the following standards apply only to a bleach kraft pulp mill, referred to in this paragraph as a "mill."

(1) After July 31, 1998, a mill may not have a detectable quantity of 2, 3, 7, 8-tetrachlorodibenzo-p-dioxin as measured in any internal waste stream of its bleach plant. For purposes of compliance, the detection level is 10 picograms per liter, unless the department adopts a lower detection level by rule, which is a routine technical rule pursuant to Title 5, chapter 375, subchapter 2-A, or a lower detection level by incorporation of a method in use by the United States Environmental Protection Agency.

(2) After December 31, 1999, a mill may not have a detectable quantity of 2, 3, 7, 8-tetrachlorodibenzo-p-furan as measured in any internal waste stream of its bleach plant. The commissioner may extend this time frame up to 6 months for a mill if the commissioner determines, based on information presented by the mill, that compliance is not achievable by the deadline due to engineering constraints, availability of equipment or other justifiable technical reasons. For purposes of compliance, the detection level is 10 picograms per liter, unless the department adopts a lower level of detection by rule, which is a routine technical rule pursuant to Title 5, chapter 375, subchapter 2-A, or a lower detection level by incorporation of a method in use by the United States Environmental Protection Agency. If a mill fails to achieve this requirement, as documented by confirmatory sampling, it shall conduct a site-specific evaluation of feasible technologies or measures to achieve it. This evaluation must be submitted to the commissioner within 6 months of the date of confirmatory sampling and include a timetable for implementation, acceptable to the commissioner, with an implementation date no later than December 31, 2002. The commissioner may establish a procedure for confirmatory sampling.

(3) After December 31, 2002, a mill may not discharge dioxin into its receiving waters. For purposes of this subparagraph, a mill is considered to have discharged dioxin into its receiving waters if 2, 3, 7, 8-tetrachlorodibenzo-p-dioxin or 2, 3, 7, 8-tetrachlorodibenzo-p-furan is detected in any of the mill's internal waste streams of its bleach plant and in a confirmatory sample at levels exceeding 10 picograms per liter, unless the department adopts a lower detection level by rule, which is a routine technical rule pursuant to Title 5, chapter 375, subchapter 2-A, or a lower detection level by incorporation of a method in use by the United States Environmental Protection Agency, or if levels of dioxin, as defined in section 420-B, subsection 1-A, paragraph A detected in fish tissue sampled below the mill's wastewater outfall are higher than levels in fish tissue sampled at an upstream reference site not affected by the mill's discharge or on the basis of a comparable surrogate procedure acceptable to the commissioner. The commissioner shall consult with the technical advisory group established in section 420-B, subsection 1, paragraph B, subparagraph (5) in making this determination and in evaluating surrogate procedures. The fish-tissue sampling test must be performed with differences between the average concentrations of dioxin in the fish samples taken upstream and downstream from the mill measured with at least 95% statistical confidence. If the mill fails to meet the fish-tissue sampling-result requirements in this subparagraph and does not demonstrate by December 31, 2004 and annually thereafter to the commissioner's satisfaction that its wastewater discharge is not the source of elevated dioxin concentrations in fish below the mill, then the commissioner may pursue any remedy authorized by law.

(4) For purposes of documenting compliance with subparagraphs (1) and (2) the internal waste stream of a bleach plant must be sampled twice per quarter by the mill. The department may conduct its own sampling and analysis of the internal waste stream of a bleach plant. Analysis of the samples must be conducted by a 3rd-party laboratory using methodology approved by the United States Environmental Protection Agency. A mill shall report to the department for informational purposes the actual laboratory results including sample detection limits on a frequency to be established by the commissioner.

The commissioner shall assess the mill for the costs of any sampling performed by the department and any analysis performed for the department under this paragraph and credit funds received to the Maine Environmental Protection Fund.

The commissioner may reduce the frequency of sampling required by a mill after 3 consecutive years of sampling have demonstrated the mill does not have a detectable quantity of 2, 3, 7, 8-tetrachlorodibenzo-p-dioxin or 2, 3, 7, 8-tetrachlorodibenzo-p-furan. [2007, c. 565, §1 (AMD).]

J. Notwithstanding any other provision of law to the contrary, the department shall use a one in 10,000 risk level when calculating ambient water quality criteria for inorganic arsenic. [2011, c. 194, §2 (NEW).]

[2011, c. 194, §2 (AMD) .]

3. Radiological, chemical or biological warfare agents. Radiological, chemical or biological warfare agents or high level radioactive wastes.

[1973, c. 450, §18 (NEW) .]

SECTION HISTORY
1971, c. 544, §130 (NEW). 1971, c. 618, §12 (AMD). 1973, c. 450, §18 (AMD). 1979, c. 127, §210 (AMD). 1979, c. 472, §14 (AMD). 1983, c. 566, §23 (AMD). 1989, c. 856, §§2,7 (AMD). 1989, c. 890, §§A40,B37,38 (AMD). RR 1991, c. 2, §141 (COR). 1993, c. 240, §1 (AMD). 1997, c. 444, §7 (AMD). 1997, c. 722, §§1,2 (AMD). 1999, c. 500, §§1,2 (AMD). 2001, c. 418, §§2,3 (AMD). 2003, c. 165, §1 (AMD). 2003, c. 689, §B6 (REV). 2007, c. 565, §1 (AMD). 2011, c. 194, §§1, 2 (AMD).

EXHIBIT
tabbies 3

38 §464. CLASSIFICATION OF MAINE WATERS

The waters of the State shall be classified in accordance with this article. [1985, c. 698, §15 (NEW).]

1. Findings; objectives; purpose. The Legislature finds that the proper management of the State's water resources is of great public interest and concern to the State in promoting the general welfare; in preventing disease; in promoting health; in providing habitat for fish, shellfish and wildlife; as a source of recreational opportunity; and as a resource for commerce and industry.

The Legislature declares that it is the State's objective to restore and maintain the chemical, physical and biological integrity of the State's waters and to preserve certain pristine state waters. The Legislature further declares that in order to achieve this objective the State's goals are:

A. That the discharge of pollutants into the waters of the State be eliminated where appropriate; [1985, c. 698, §15 (NEW).]

B. That no pollutants be discharged into any waters of the State without first being given the degree of treatment necessary to allow those waters to attain their classification; and [1985, c. 698, §15 (NEW).]

C. That water quality be sufficient to provide for the protection and propagation of fish, shellfish and wildlife and provide for recreation in and on the water. [1985, c. 698, §15 (NEW).]

The Legislature intends by passage of this article to establish a water quality classification system which will allow the State to manage its surface waters so as to protect the quality of those waters and, where water quality standards are not being achieved, to enhance water quality. This classification system shall be based on water quality standards which designate the uses and related characteristics of those uses for each class of water and which also establish water quality criteria necessary to protect those uses and related characteristics. The Legislature further intends by passage of this article to assign to each of the State's surface water bodies the water quality classification which shall designate the minimum level of quality which the Legislature intends for the body of water. This designation is intended to direct the State's management of that water body in order to achieve at least that minimum level of water quality.

[1985, c. 698, §15 (NEW) .]

2. Procedures for reclassification. Reclassification of state waters shall be governed by the following provisions.

A. Upon petition by any person or on its own motion, the board may initiate, following public notice, and the commissioner shall conduct classification studies and investigations. Information collected during these studies and investigations must be made available to the public in an expeditious manner. After consultation with other state agencies and, where appropriate, individuals, citizen groups, industries, municipalities and federal and interstate water pollution control agencies, the board may propose changes in water classification. [1989, c. 890, Pt. A, §40 (AFF); 1989, c. 890, Pt. B, §54 (AMD).]

B. The board shall hold public hearings in the affected area, or reasonably adjacent to the affected area, for the purposes of presenting to all interested persons the proposed classification for each particular water body and obtaining public input. [1989, c. 890, Pt. A, §40 (AFF); 1989, c. 890, Pt. B, §54 (AMD).]

C. The board may recommend changes in classification it deems necessary to the Legislature. [1985, c. 698, §15 (NEW).]

D. The Legislature shall have sole authority to make any changes in the classification of the waters of the State. [1985, c. 698, §15 (NEW).]

[1989, c. 890, Pt. A, §40 (AFF); 1989, c. 890, Pt. B, §54 (AMD) .]

2-A. Removal of designated uses; creation of subcategories of designated uses. Removal of designated uses and creation of subcategories of designated uses are governed by the provisions of this subsection and 40 Code of Federal Regulations, Part 131, as amended.

A. The board must conduct a use attainability analysis:

(1) Prior to proposing to the Legislature a designated use of a specific water body that does not include the uses specified in the Federal Water Pollution Control Act, Public Law 92-500, Section 101(a)(2), as amended; or

(2) Prior to proposing to the Legislature the removal of a designated use or the adoption of a subcategory of such a designated use that requires less stringent criteria. [1993, c. 344, §1 (NEW).]

B. The board may not recommend to the Legislature the removal of a designated use or the establishment of a subcategory of the use, if:

(1) It is an existing use as defined in section 464, subsection 4, paragraph F, subparagraph (1), unless another designated use is adopted requiring more stringent criteria;

(2) The use can be attained by implementing effluent limits required under the Federal Water Pollution Control Act, Public Law 92-500, Sections 301(b) and 306, as amended and by implementing cost-effective and reasonable best management practices for nonpoint source control;

(3) The water body in question is currently attaining the designated use; or

(4) Adoption of the recommendation allows the introduction of a new discharge or the expansion of an existing discharge into the water body in question that is not attaining the designated use. [1993, c. 344, §1 (NEW).]

C. The board may adopt any recommendation under this subsection only after holding a public hearing in the affected area or adjacent to the affected area. Conduct of the public hearing and the board's subsequent decision are governed by Title 5, chapter 375, subchapter IV. [1993, c. 344, §1 (NEW).]

D. A finding by the board that attainment of a designated use is not feasible must be supported by a demonstration that the conditions of 40 Code of Federal Regulations 131.10(g) are met. [1993, c. 344, §1 (NEW).]

E. If the board adopts a proposal to enact a designated use under paragraph A, subparagraph (1) or to remove a designated use or adopt a subcategory of a designated use under paragraph A, subparagraph (2), it shall forward that proposal to the joint standing committee of the Legislature having jurisdiction over natural resources matters at the next regular session of the Legislature. The board may not forward any other recommendation to the Legislature under this subsection. The Legislature has sole authority to make changes in the designated uses of the waters of the State, including the creation of a subcategory of a designated use. [1993, c. 344, §1 (NEW).]

F. For the purposes of this subsection, "designated use" means the use specified in water quality standards for each water body or segment under sections 465 to 465-C and sections 467 to 470 whether or not that use is being attained. A designated use includes its associated habitat characteristic under sections 465 to 465-C. [1993, c. 344, §1 (NEW).]

[1993, c. 344, §1 (NEW) .]

2-B. Temporary removal of designated uses; use attainability analysis and creation of subcategory of uses for combined sewer overflows. When designated uses are not being met as a result of combined sewer overflow discharges, the board may, consistent with this subsection and 40 Code of Federal Regulations, Part 131, temporarily remove designated uses that are not existing uses and create a temporary combined sewer overflow subcategory referred to as a CSO subcategory. Notwithstanding this subsection, it remains the goal of the State to fully maintain and restore water quality and eliminate or control combined sewer overflows as soon as practicable.

A. The board may create temporary CSO subcategories in classes B, C and SB and SC waters only when, due to the age, condition and design of an existing sewer system, technical or financial limitations prevent the timely attainment of all designated uses. In a CSO subcategory, uses are suspended only in the smallest area possible, for the shortest duration practicable and include only those designated uses and areas determined by the board to have the least potential for public benefit. [1995, c. 284, §1 (NEW).]

B. Notwithstanding subsections 2 and 2-A, CSO subcategories may be created by the board upon application by a municipality or quasi-municipality having licensed combined sewer overflow discharges, if the following standards are met.

(1) The applicant submits to the department for approval, with or without conditions, a study and plan, including an implementation schedule, for combined sewer overflow abatement, referred to as the CSO plan. In order for the board to create a CSO subcategory, the CSO plan must:

(a) Place high priority on abatement of combined sewer overflows that affect waters having the greatest potential for public use or benefit and plan to relocate any remaining discharges to areas where minimal impacts or losses of uses would occur; and

(b) Provide for the implementation as soon as practical of technology-based control methods to achieve best practicable treatment or ensure that cost-effective best management practices are being implemented.

(2) The board finds that attainment of a designated use is not feasible and such determination must be supported by demonstration that the conditions of 40 Code of Federal Regulations, Part 131.10(g) are met.

(3) The board finds that the uses to be affected are not existing uses as defined in subsection 4, paragraph F, subparagraph (1).

(4) The board finds that discharges from combined sewer overflows are not affecting uses that, in the board's judgment, constitute high value or important resources. In determining if a resource is high value or important the board shall consider its economic, recreational and ecological significance, the likelihood that removal of a combined sewer overflow will lead to utilization of that resource and the effects of other discharges or conditions on that resource. [1995, c. 284, §1 (NEW).]

C. Prior to creating any CSO subcategory, the board shall adopt rules regarding required studies, best practicable treatment, abatement options and related issues for combined sewer overflows. CSO subcategories may be created only after completion of the following.

(1) Either during or following development of combined sewer abatement plans, licensees shall conduct public hearings in the area that would be affected by a CSO subcategory. Notices and records of hearings must be kept and included as part of an application made to the board.

(2) Combined sewer overflow abatement plans must be submitted to the department for technical review and approval.

(3) Licensees proposing CSO subcategories shall submit formal applications to the board. Information in the application must include: description of the areas and uses to be affected, the time and duration of effects, comments received at public hearings, a description of continuing efforts to abate impacts and proposals for periodic review and update of abatement plans.

(4) The board shall provide public notice of applications for CSO subcategories and solicit public comments. The board shall also consult with agencies, public officials and other persons identified as having interest in the area to be affected. Based on the results of public hearings held by the applicant, the comments received and the nature of the application, the board may hold a public hearing.

(5) The board may approve, approve with conditions or deny applications for CSO subcategories. In cases when a water body is affected by combined sewer overflows from more than one licensee, the board shall, to the maximum extent possible, consider regional impacts and seek to establish common goals and uses for those waters.

(6) In a manner prescribed by the board, applicants receiving approval of CSO subcategories shall provide notice to the public in the area affected, describing the limitations on use of the water body. [1995, c. 284, §1 (NEW).]

D. Upon creation of a CSO subcategory and removal of a designated use, the board may temporarily suspend or modify water quality criteria associated with that use as appropriate, but only to the extent and duration that those criteria are affected by the licensee for whom the assignment is made. Action by the board under this subsection does not relieve other discharge sources from any requirement to provide necessary treatment or best management practices or to comply with water quality criteria. [1995, c. 284, §1 (NEW).]

E. Either independently or in conjunction with the requirements of subsection 3 and upon renewal of individual waste discharge licenses, the department shall periodically review all CSO subcategories. Reviews of CSO subcategories must take into consideration water quality criteria and uses, combined sewer overflow abatement technology, monitoring data, financial information and regulatory requirements affecting CSO subcategories. [1995, c. 284, §1 (NEW).]

Upon petition by the department or any person or on its own motion, the board may, at its discretion, and following notice and opportunity for hearing, revise or revoke a CSO subcategory when it finds any change in the conditions under which the existing designation was made. The failure to comply with the measures specified in an approved combined sewer overflow abatement plan is cause for revocation of a CSO subcategory.

[1995, c. 284, §1 (NEW) .]

3. Reports to the Legislature. The department shall periodically report to the Legislature as governed by the following provisions.

A. The commissioner shall submit to the first regular session of each Legislature a report on the quality of the State's waters which describes existing water quality, identifies waters that are not attaining their classification and states what measures are necessary for the attainment of the standards of their classification. [1989, c. 890, Pt. A, §40 (AFF); 1989, c. 890, Pt. B, §55 (AMD).]

B. The board shall, from time to time, but at least once every 3 years, hold public hearings for the purpose of reviewing the water quality classification system and related standards and, as appropriate, recommending changes in the standards to the Legislature. [2003, c. 551, §6 (AMD).]

C. The commissioner shall report annually to each regular session of the Legislature on the status of licensed discharges. [1989, c. 890, Pt. A, §40 (AFF); 1989, c. 890, Pt. B, §55 (AMD).]

D. [1989, c. 890, Pt. A, §40 (AFF); 1989, c. 890, Pt. B, §55 (RP).]

[2003, c. 551, §6 (AMD) .]

4. General provisions. The classification system for surface waters established by this article shall be subject to the following provisions.

A. Notwithstanding section 414-A, the department may not issue a water discharge license for any of the following discharges:

(1) Direct discharge of pollutants to waters having a drainage area of less than 10 square miles, except that:

(a) Discharges into these waters that were licensed prior to January 1, 1986 are allowed to continue only until practical alternatives exist;

(b) Storm water discharges in compliance with state and local requirements are exempt from this subparagraph;

(c) Aquatic pesticide or chemical discharges approved by the department and conducted by the department, the Department of Inland Fisheries and Wildlife or an agent of either agency for the purpose of restoring biological communities affected by an invasive species are exempt from this subparagraph;

(d) Chemical discharges for the purpose of restoring water quality in GPA waters approved by the department are exempt from this subparagraph; and

(e) Discharges of aquatic pesticides approved by the department for the control of mosquito-borne diseases in the interest of public health and safety using materials and methods that provide for protection of nontarget species are exempt from this subparagraph. When the department issues a license for the discharge of aquatic pesticides authorized under this division, the department shall notify the municipality in which the application is licensed to occur and post the notice on the department's publicly accessible website.

(2) New direct discharge of domestic pollutants to tributaries of Class-GPA waters;

(3) Any discharge into a tributary of GPA waters that by itself or in combination with other activities causes water quality degradation that would impair the characteristics and designated uses of downstream GPA waters or causes an increase in the trophic state of those GPA waters except for aquatic pesticide or chemical discharges approved by the department and conducted by the department, the Department of Inland Fisheries and Wildlife or an agent of either agency for the purpose of restoring biological communities affected by an invasive species in the GPA waters or a tributary to the GPA waters;

(4) Discharge of pollutants to waters of the State that imparts color, taste, turbidity, toxicity, radioactivity or other properties that cause those waters to be unsuitable for the designated uses and characteristics ascribed to their class;

(5) Discharge of pollutants to any water of the State that violates sections 465, 465-A and 465-B, except as provided in section 451; causes the "pH" of fresh waters to fall outside of the 6.0 to 8.5 range; or causes the "pH" of estuarine and marine waters to fall outside of the 7.0 to 8.5 range;

(6) New discharges of domestic pollutants to the surface waters of the State that are not conveyed and treated in municipal or quasi-municipal sewage facilities. For the purposes of this subparagraph, "new discharge" means any overboard discharge that was not licensed as of June 1, 1987, except discharges from vessels and those discharges that were in continuous existence for the 12 months preceding June 1, 1987, as demonstrated by the applicant to the department with clear and convincing evidence. The volume of the discharge from an overboard discharge facility that was licensed as of June 1, 1987 is determined by the actual or estimated volume from the facilities connected to the overboard discharge facility during the 12 months preceding June 1, 1987 or the volume allowed by the previous license, whichever is less, unless it is found by the department that an error was made during prior licensing. The months during which a discharge may occur from an overboard discharge facility that was licensed as of June 1, 1987 must be determined by the actual use of the facility at the time of the most recent license application prior to June 1, 1987 or the actual use of the facility during the 12 months prior to June 1, 1987, whichever is greater. If the overboard discharge facility was the primary residence of an owner at the time of the most recent license application prior to June 1, 1987 or during the 12 months prior to June 1, 1987, then

the facility is considered a year-round residence. "Year-round residence" means a facility that is continuously used for more than 8 months of the year. For purposes of licensing, the department shall treat an increase in the licensed volume or quantity of an existing discharge or an expansion in the months during which the discharge takes place as a new discharge of domestic pollutants;

(7) After the Administrator of the United States Environmental Protection Agency ceases issuing permits for discharges of pollutants to waters of this State pursuant to the administrator's authority under the Federal Water Pollution Control Act, Section 402(c)(1), any proposed license to which the administrator has formally objected under 40 Code of Federal Regulations, Section 123.44, as amended, or any license that would not provide for compliance with applicable requirements of that Act or regulations adopted thereunder;

(8) Discharges for which the imposition of conditions can not ensure compliance with applicable water quality requirements of this State or another state;

(9) Discharges that would, in the judgment of the Secretary of the United States Army, substantially impair anchorage or navigation;

(10) Discharges that would be inconsistent with a plan or plan amendment approved under the Federal Water Pollution Control Act, Section 208(b); and

(11) Discharges that would cause unreasonable degradation of marine waters or when insufficient information exists to make a reasonable judgment whether the discharge would cause unreasonable degradation of marine waters.

Notwithstanding subparagraph (6), the department may issue a wastewater discharge license allowing for an increase in the volume or quantity of discharges of domestic pollutants from any university, college or school administrative unit sewage facility, as long as the university, college or school administrative unit has a wastewater discharge license valid on the effective date of this paragraph and the increase in discharges does not violate the conditions of subparagraphs (1) to (5) and (7) to (11) or other applicable laws. [2007, c. 291, §1 (AMD).]

B. All surface waters of the State shall be free of settled substances which alter the physical or chemical nature of bottom material and of floating substances, except as naturally occur, which impair the characteristics and designated uses ascribed to their class. [1985, c. 698, §15 (NEW).]

C. Where natural conditions, including, but not limited to, marshes, bogs and abnormal concentrations of wildlife cause the dissolved oxygen or other water quality criteria to fall below the minimum standards specified in sections 465, 465-A and 465-B, those waters shall not be considered to be failing to attain their classification because of those natural conditions. [1985, c. 698, §15 (NEW).]

D. Except as otherwise provided in this paragraph, for the purpose of computing whether a discharge will violate the classification of any river or stream, the assimilative capacity of the river or stream must be computed using the minimum 7-day low flow which can be expected to occur with a frequency of once in 10 years. The department may use a different flow rate only for those toxic substances regulated under section 420. To use a different flow rate, the department must find that the flow rate is consistent with the risk being addressed. [1991, c. 159, (AMD).]

E. The waters contained in excavations approved by the department for wastewater treatment purposes are unclassified waters. [1989, c. 890, Pt. A, §40 (AFF); 1989, c. 890, Pt. B, §57 (AMD).]

F. The antidegradation policy of the State is governed by the following provisions.

(1) Existing in-stream water uses and the level of water quality necessary to protect those existing uses must be maintained and protected. Existing in-stream water uses are those uses which have actually occurred on or after November 28, 1975, in or on a water body whether or not the uses are included in the standard for classification of the particular water body.

Determinations of what constitutes an existing in-stream water use on a particular water body must be made on a case-by-case basis by the department. In making its determination of uses to be protected and maintained, the department shall consider designated uses for that water body and:

(a) Aquatic, estuarine and marine life present in the water body;

(b) Wildlife that utilize the water body;

(c) Habitat, including significant wetlands, within a water body supporting existing populations of wildlife or aquatic, estuarine or marine life, or plant life that is maintained by the water body;

(d) The use of the water body for recreation in or on the water, fishing, water supply, or commercial activity that depends directly on the preservation of an existing level of water quality. Use of the water body to receive or transport waste water discharges is not considered an existing use for purposes of this antidegradation policy; and

(e) Any other evidence that, for divisions (a), (b) and (c), demonstrates their ecological significance because of their role or importance in the functioning of the ecosystem or their rarity and, for division (d), demonstrates its historical or social significance.

(1-A) The department may only issue a waste discharge license pursuant to section 414-A, or approve a water quality certification pursuant to the United States Clean Water Act, Section 401, Public Law 92-500, as amended, when the department finds that:

(a) The existing in-stream use involves use of the water body by a population of plant life, wildlife, or aquatic, estuarine or marine life, or as aquatic, estuarine, marine, wildlife, or plant habitat, and the applicant has demonstrated that the proposed activity would not have a significant impact on the existing use. For purpose of this division, significant impact means:

(i) Impairing the viability of the existing population, including significant impairment to growth and reproduction or an alteration of the habitat which impairs viability of the existing population; or

(b) The existing in-stream use involves use of the water body for recreation in or on the water, fishing, water supply or commercial enterprises that depend directly on the preservation of an existing level of water quality and the applicant has demonstrated that the proposed activity would not result in significant degradation of the existing use.

The department shall determine what constitutes a population of a particular species based upon the degree of geographic and reproductive isolation from other individuals of the same species.

If the department fails to find that the conditions of this subparagraph are met, water quality certification, pursuant to the United States Clean Water Act, Section 401, Public Law 92-500, as amended, is denied.

(2) Where high quality waters of the State constitute an outstanding national resource, that water quality must be maintained and protected. For purposes of this paragraph, the following waters are considered outstanding national resources: those water bodies in national and state parks and wildlife refuges; public reserved lands; and those water bodies classified as Class AA and SA waters pursuant to section 465, subsection 1; section 465-B, subsection 1; and listed under sections 467, 468 and 469.

(3) The department may only issue a discharge license pursuant to section 414-A or approve water quality certification pursuant to the Federal Water Pollution Control Act, Section 401, Public Law 92-500, as amended, if the standards of classification of the water body and the requirements of this paragraph are met. The department may issue a discharge license or approve water quality certification for a project affecting a water body in which the standards of classification are not met if the project does not cause or contribute to the failure of the water body to meet the standards of classification.

(4) When the actual quality of any classified water exceeds the minimum standards of the next highest classification, that higher water quality must be maintained and protected. The board shall recommend to the Legislature that that water be reclassified in the next higher classification.

(5) The department may only issue a discharge license pursuant to section 414-A or approve water quality certification pursuant to the United States Clean Water Act, Section 401, Public Law 92-500, as amended, which would result in lowering the existing quality of any water body after making a finding, following opportunity for public participation, that the action is necessary to achieve important economic or social benefits to the State and when the action is in conformance with subparagraph (3). That finding must be made following procedures established by rule of the board. [1991, c. 66, Pt. B, §1 (AMD).]

G. [1989, c. 442, §5 (RP).]

H. A hydropower project, as defined by section 632, constructed after the effective date of this paragraph may cause some change to the habitat and aquatic life of the project's impoundment and the waters immediately downstream of and measurably affected by the project, so long as the habitat and aquatic life criteria of those waters' classification under sections 465, 465-A, 467, and 468 are met. This paragraph does not constitute any change in the criteria for habitat and aquatic life under sections 465 and 465-A. [1991, c. 813, Pt. D, §1 (NEW).]

I. [1995, c. 312, §1 (NEW); T. 38, §464, sub-§4, ¶ I (RP).]

J. For the purpose of calculating waste discharge license limits for toxic substances, the department may use any unallocated assimilative capacity that the department has set aside for future growth if the use of that unallocated assimilative capacity would avoid an exceedance of applicable ambient water quality criteria or a determination by the department of a reasonable potential to exceed applicable ambient water quality criteria. [2011, c. 194, §3 (NEW).]

K. Unless otherwise required by an applicable effluent limitation guideline adopted by the department, any limitations for metals in a waste discharge license may be expressed only as mass-based limits. [2011, c. 194, §3 (NEW).]

[2011, c. 194, §3 (AMD) .]

5. Rulemaking. In accordance with the Maine Administrative Procedure Act, the board shall promulgate rules necessary to implement the water quality classification system established by this article. In promulgating rules, the board shall solicit and consider, in addition to any other materials, information on the economic and environmental impact of those rules.

Rules shall be promulgated by January 1, 1987, and as necessary thereafter, and shall include, but are not limited to, sampling and analytical methods, protocols and procedures for satisfying the water quality criteria, including evaluation of the impact of any discharge on the resident biological community.

Rules adopted pursuant to this subsection shall become effective upon adoption. Rules adopted pursuant to this subsection shall be submitted to the joint standing committee of the Legislature having jurisdiction over natural resources for review during the next regular session of the Legislature following adoption. This committee may submit legislation it deems necessary to clarify legislative intent regarding rules adopted pursuant to this subsection. If the committee takes no action, the rules shall continue in effect.

[1985, c. 698, §15 (NEW) .]

6. Implementation of biological water quality criteria. The implementation of water quality criteria pertaining to the protection of the resident biological community shall be governed by the provisions of this subsection.

A. At any time during the term of a valid wastewater discharge license that was issued prior to the effective date of this article, the board may modify that license in accordance with section 341-D, subsection 3 if the discharger is not in compliance with the water quality criteria pertaining to the

protection of the resident biological community. When a discharge license is modified under this subsection, the board shall establish a reasonable schedule to bring the discharge into compliance with the water quality criteria pertaining to the protection of the resident biological community. [1991, c. 66, Pt. A, §13 (RPR); 1991, c. 66, Pt. A, §43 (AFF).]

B. When a discharge license is issued after the effective date of this article and before the effective date of the rules adopted pursuant to subsection 5, the department shall establish a reasonable schedule to bring the discharge into compliance with the water quality criteria pertaining to the protection of the resident biological community. [1989, c. 890, Pt. A, §40 (AFF); 1989, c. 890, Pt. B, §59 (AMD).]

C. A discharger seeking a new discharge license following the effective date of the rules adopted under subsection 5 shall comply with the water quality criteria of this article. [1985, c. 698, §15 (NEW).]

[1991, c. 66, Pt. A, §13 (AMD); 1991, c. 66, Pt. A, §43 (AFF) .]

7. Interdepartmental coordination. The commissioner, the Commissioner of Marine Resources and the Commissioner of Health and Human Services shall jointly:

A. Make available accurate and consistent information on the requirements of this section, section 411-A and section 414-A, subsection 1-B; and [1989, c. 442, §6 (NEW).]

B. Certify wastewater treatment and disposal technologies which can be used to replace overboard discharges. [1989, c. 890, Pt. A, §40 (AFF); 1989, c. 890, Pt. B, §60 (AMD).]

[1989, c. 890, Pt. A, §40 (AFF); 1989, c. 890, Pt. B, §60 (AMD); 2003, c. 689, Pt. B, §7 (REV) .]

8. Development of group systems. Subject to the provisions of section 414-A, subsection 1-B, the commissioner shall coordinate the development and implementation of wastewater treatment and disposal systems serving more than one residence or commercial establishment when individual replacement systems are not feasible.

[1989, c. 890, Pt. A, §40 (AFF); 1989, c. 890, Pt. B, §60 (AMD) .]

9. Existing hydropower impoundments managed as great ponds; habitat and aquatic life criteria.

[2005, c. 159, §1 (RP) .]

9-A. Existing hydropower impoundments managed as great ponds; habitat and aquatic life criteria. The following provisions govern habitat and aquatic life criteria for existing hydropower impoundments managed as great ponds.

A. For the purposes of water quality certification under the Federal Water Pollution Control Act, Public Law 92-500, Section 401, as amended, and licensing of modifications under section 636, the hydropower project located on the water body referenced in section 467, subsection 7, paragraph C, subparagraph (1), division (b-1), is deemed to have met the habitat characteristics and aquatic life criteria in the existing impoundment if:

(1) The project is in existence on June 30, 1992;

(2) The project creates an impoundment that remains classified under section 465-A after June 30, 1992;

(3) The project creates an impoundment that is subject to water level fluctuations that have an effect on the habitat and aquatic life in the littoral zone so that the habitat and aquatic life differ significantly from that found in an unimpounded great pond; and

(4) The existing impounded waters are able to support all species of fish indigenous to those waters and the structure and function of the resident biological community in the impounded waters is maintained. [2005, c. 159, §2 (NEW).]

B. For the purposes of water quality certification under the Federal Water Pollution Control Act, Public Law 92-500, Section 401, as amended, and licensing of modifications under section 636, Ragged Lake, located in the Penobscot River, West Branch drainage, is deemed to have met the habitat characteristics and aquatic life criteria in the existing impoundment if that habitat and aquatic life satisfy the aquatic life criteria contained in section 465, subsection 4, paragraph C, except that habitat and aquatic life in the portions of the water body affected by annual drawdowns of up to 20 feet may reflect the effects of such drawdowns, based on a use attainability analysis conducted by the board pursuant to subsection 2-A. [2005, c. 159, §2 (NEW).]

C. For the purposes of water quality certification under the Federal Water Pollution Control Act, Public Law 92-500, Section 401, as amended, and licensing of modifications under section 636, Seboomook Lake, located in the Penobscot River, West Branch drainage, is deemed to have met the habitat characteristics and aquatic life criteria in the existing impoundment if that habitat and aquatic life satisfy the aquatic life criteria contained in section 465, subsection 4, paragraph C, except that habitat and aquatic life in the portions of the water body affected by annual drawdowns of up to 17 feet may reflect the effects of such drawdowns, based on a use attainability analysis conducted by the board pursuant to subsection 2-A. [2005, c. 159, §2 (NEW).]

D. Other than those described in paragraphs A, B and C, all hydropower projects with impoundments in existence on June 30, 1992 that remain classified under section 465-A after June 30, 1992 and that do not attain the habitat and aquatic life criteria of that section must, at a minimum, satisfy the aquatic life criteria contained in section 465, subsection 4, paragraph C. [2005, c. 159, §2 (NEW).]

E. When the actual water quality of the impounded waters attains any more stringent characteristic or criteria of those waters' classification under section 465-A, that water quality must be maintained and protected. [2005, c. 159, §2 (NEW).]

[2005, c. 159, §2 (NEW) .]

10. Existing hydropower impoundments managed under riverine classifications; habitat and aquatic life criteria. For the purposes of water quality certification under the Federal Water Pollution Control Act, Public Law 92-500, section 401, as amended, and the licensing of modifications under section 636, hydropower projects in existence on the effective date of this subsection, the impoundments of which are classified under section 465, are subject to the provisions of this subsection in recognition of some changes to aquatic life and habitat that have occurred due to the existing impoundments of these projects.

A. Except as provided in paragraphs B and D, the habitat characteristics and aquatic life criteria of Classes A and B are deemed to be met in the existing impoundments classified A or B of those projects if:

(1) The impounded waters achieve the aquatic life criteria of section 465, subsection 4, paragraph C. [1991, c. 813, Pt. B, §1 (NEW).]

B. The habitat characteristics and aquatic life criteria of Classes A and B are not deemed to be met in the existing impoundments of those projects referred to in paragraph A if:

(1) Reasonable changes can be implemented that do not significantly affect existing energy generation capability; and

(2) Those changes would result in improvement in the habitat and aquatic life of the impounded waters.

If the conditions described in subparagraphs (1) and (2) occur, those changes must be implemented and the resulting improvement in habitat and aquatic life must be achieved and maintained. [1991, c. 813, Pt. B, §1 (NEW).]

C. If the conditions described in paragraph B, subparagraphs (1) and (2) occur at a project in existence on the effective date of this subsection, the impoundment of which is classified C, the changes described in paragraph B, subparagraphs (1) and (2) must be implemented and the resulting improvement in habitat and aquatic life must be achieved and maintained. [1991, c. 813, Pt. B, §1 (NEW).]

D. When the actual water quality of waters affected by this subsection attains any more stringent characteristic or criteria of those waters' classification under sections 465, 467 and 468, that water quality must be maintained and protected. [1991, c. 813, Pt. B, §1 (NEW).]

[1991, c. 813, Pt. B, §1 (NEW) .]

11. Downstream stretches affected by existing hydropower projects. Hydropower projects in existence on the effective date of this subsection that are located on water bodies referenced in section 467, subsection 4, paragraph A, subparagraphs (1) and (7), and section 467, subsection 12, paragraph A, subparagraphs (7) and (9) are subject to the provisions of this subsection.

For the purposes of water quality certification of hydropower projects under the Federal Water Pollution Control Act, Public Law 92-500, Section 401, as amended, and licensing of modifications to these hydropower projects under section 636, the habitat characteristics and aquatic life criteria of Class A are deemed to be met in the waters immediately downstream of and measurably affected by the projects listed in this subsection if the criteria contained in section 465, subsection 4, paragraph C are met.

[1993, c. 1, §114 (COR) .]

12. Discharges from certain fish hatcheries. An unlicensed discharge from a fish hatchery is considered, and continues to be considered after it is licensed pursuant to section 413, the same as a discharge licensed prior to January 1, 1986 for the purposes of subsection 4, paragraph A, subparagraph (1); section 465, subsection 2, paragraph C; and section 465-A, subsection 1, paragraph C if the following conditions are met:

A. The discharge was in existence prior to January 1, 1986; [1999, c. 720, §1 (NEW).]

B. The fish hatchery is licensed to cultivate fish by the Department of Inland Fisheries and Wildlife on the effective date of this subsection; and [1999, c. 720, §1 (NEW).]

C. An application from the hatchery for a waste discharge license is accepted as complete for processing by the Department of Environmental Protection within 90 days of notification that a waste discharge license is required pursuant to section 413. [1999, c. 720, §1 (NEW).]

The Department of Environmental Protection shall notify a fish hatchery with an unlicensed discharge that a waste discharge license is required pursuant to section 413 within 90 days of the effective date of this subsection or within 90 days of finding the unlicensed discharge.

[1999, c. 720, §1 (NEW) .]

13. Measurement of dissolved oxygen in riverine impoundments. Compliance with dissolved oxygen criteria in existing riverine impoundments must be measured as follows.

A. Compliance with dissolved oxygen criteria may not be measured within 0.5 meters of the bottom of existing riverine impoundments. [2003, c. 257, §1 (NEW).]

B. Where mixing is inhibited due to thermal stratification in an existing riverine impoundment, compliance with numeric dissolved oxygen criteria may not be measured below the higher of:

(1) The point of thermal stratification when such stratification occurs; or

(2) The point proposed by the department as an alternative depth for a specific riverine impoundment based on all factors included in section 466, subsection 11-A and for which a use attainability analysis is conducted if required by the United States Environmental Protection Agency.

For purposes of this paragraph, "thermal stratification" means a change of temperature of at least one degree Celsius per meter of depth, causing water below this point in an impoundment to become isolated and not mix with water above this point in the impoundment. [2003, c. 257, §1 (NEW).]

C. Where mixing is inhibited due to natural topographical features in an existing riverine impoundment, compliance with numeric dissolved oxygen criteria may not be measured within that portion of the impoundment that is topographically isolated. Such natural topographic features may include, but not be limited to, natural deep holes or river bottom sills. [2003, c. 257, §1 (NEW).]

Notwithstanding the provisions of this subsection, dissolved oxygen concentrations in existing riverine impoundments must be sufficient to support existing and designated uses of these waters. For purposes of this subsection, "existing riverine impoundments" means all impoundments of rivers and streams in existence as of January 1, 2001 and not otherwise classified as GPA.

[2003, c. 257, §1 (NEW) .]

SECTION HISTORY
. 1985, c. 698, §15 (NEW). 1987, c. 180, §§4,5 (AMD). 1987, c. 419, §10 (AMD). 1987, c. 567, (AMD). 1989, c. 309, §2 (AMD). 1989, c. 442, §§4-6 (AMD). 1989, c. 764, §1 (AMD). 1989, c. 856, §§6,7 (AMD). 1989, c. 878, §B40 (AMD). 1989, c. 890, §§A40,B54-60 (AMD). 1991, c. 66, §§A12,13,B1 (AMD). 1991, c. 66, §A43 (AFF). 1991, c. 159, (AMD). 1991, c. 813, §§A1,B1,C1, D1 (AMD). RR 1993, c. 1, §§113,114 (COR). 1993, c. 40, §1 (AMD). 1993, c. 344, §§1,2 (AMD). 1995, c. 284, §1 (AMD). 1995, c. 312, §1 (AMD). 1997, c. 794, §A30 (AMD). 1999, c. 720, §1 (AMD). 2003, c. 245, §7 (AMD). 2003, c. 246, §14 (AMD). 2003, c. 257, §1 (AMD). 2003, c. 318, §2 (AMD). 2003, c. 551, §6 (AMD). 2003, c. 650, §3 (AMD). 2003, c. 689, §B7 (REV). 2005, c. 159, §§1,2 (AMD). 2005, c. 182, §1 (AMD). 2007, c. 291, §1 (AMD). 2011, c. 194, §3 (AMD). MRSA T.38, §464/4/I (AMD).

ENVIRON

April 25, 2011

The Honorable Thomas B. Saviello
The Honorable James M. Hamper
Co-Chairs
Joint Standing Committee on Environment
and Natural Resources
State of Maine Legislature
Cross State Office Building, Room 216
Augusta ME 04333

Re: LD 515 - Numeric Ambient Water Quality Criteria Inorganic Arsenic

Dear Senator Saviello and Representative Hamper:

My name is Rosalind Schoof. I am a board-certified toxicologist and a Principal at ENVIRON International Corporation. This letter is submitted in support of the revisions to the Maine Ambient Water Quality Criteria (AWQC) for inorganic arsenic proposed in LD 515. Since the early 1990s my research has focused on characterizing sources of exposure to arsenic, including environmental sources and arsenic naturally present in food and drinking water. Since the early 2000s, I have been studying the scientific bases for the U.S. Environmental Protection Agency (USEPA) arsenic AWQC, specifically the forms of arsenic found in seafood and the influence that arsenic concentrations in water might have on arsenic concentrations in fish and shellfish. During the past two years I have made two presentations (during June 2009 and March 2011) on these issues at meetings attended by members of the Maine Department of Environmental Protection (Maine DEP) and the USEPA.

Inorganic arsenic is naturally present throughout our environment. In areas of the world where very high concentrations are found in drinking water arsenic has been shown to cause increases in some cancers; however, no increased risk has been observed for the normal range of arsenic in food and water in the United States. Nevertheless, the USEPA regulates arsenic as though risks were present at low levels. Maine's current AWQC of 0.012 µg/L for water plus fish and 0.028 µg/L for fish only are even lower than the USEPA AWQC. The USEPA methodology for deriving AWQC allows AWQC to be based on incremental risks ranging from 10^{-6} (i.e., one-in-one-million) to 10^{-4} (i.e., one-in-ten-thousand). The proposed legislation increases the incremental risk level from 10^{-6} to 10^{-4}, an incremental risk level that will be acceptable to USEPA. No other aspects of the AWQC will be changed.

For several reasons, the proposed change in the risk level for the arsenic AWQC will not result in any increase in health risks to Maine residents. The primary reason is that the natural arsenic concentrations in surface waters in Maine are similar to the concentrations of the proposed AWQC. There are no incremental human health benefits of regulating arsenic discharges to levels below the proposed criteria because naturally occurring background levels are in this range. As long as natural levels are not being increased people will not have increased exposure to arsenic, and therefore, will not have increased risk.

Several other factors support the proposed increase in the arsenic AWQC. It is the intention of the USEPA that the AWQC apply only to inorganic arsenic. Most arsenic in surface water is in

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the inorganic form, but in fish most arsenic is in the form of organic compounds that are much less toxic than inorganic arsenic. On average in freshwater fish, only 10% of the arsenic is inorganic, while in marine and estuarine fish, only 2% is inorganic. Furthermore, small changes in arsenic concentrations in surface water do not appear to cause changes in the arsenic concentrations in fish. These factors suggest that arsenic AWQC should be based only on water consumption and not on fish consumption. Consistent with this conclusion, 23 states and territories have received approval to use the arsenic drinking water standard of 10 µg/L as their AWQC. More than 5 states and territories have even higher AWQC. A number of states apply the arsenic AWQC for protection of human health only to fresh water, and not to marine waters (which are not potable).

In conclusion, the proposed arsenic criteria in LD 515 are protective of human health and are more stringent than what most other states are doing. The criteria are also consistent with USEPA methodologies and guidelines for developing human health criteria, and will not lead to increased exposure to arsenic for Maine residents. Based on these findings, I urge this committee to accept the recommendations made by the Department of Environmental Protection and revise the arsenic AWQC as proposed.

Sincerely,

Rosalind A. Schoof, PhD, DABT, Fellow ATS
Principal

cc: Members of the Joint Standing Committee on Environment and Natural Resources

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Human and Ecological Risk Assessment, 12: 904–923, 2006

ISSN: 1080-7039 print / 1549-7680 online
DOI: 10.1080/10807030600826821

Arsenic Bioaccumulation in Freshwater Fishes

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ABSTRACT

The arsenic ambient water quality criterion (AWQC) for protection of human health via ingestion of aquatic organisms is currently 0.14 μg/L. This AWQC is derived using a bioconcentration factor (BCF) of 44, which is a consumption-weighted average based on two data points for oysters and fish that was proposed by the U.S. Environmental Protection Agency in 1980 for broad application to freshwater and marine environments. This BCF is based on the assumption that bioaccumulation is a simple linear function of the exposure concentration. In the nearly quarter of a century since this BCF was promulgated, there have been additions to the arsenic bioaccumulation database and a broader scientific understanding of bioaccumulation mechanisms and how they can be applied to estimating tissue concentrations in aquatic organisms. From this database, we identified 12 studies of arsenic bioaccumulation in freshwater fishes in order to explore differences in laboratory-generated BCFs and field-generated bioaccumulation factors (BAFs) and to assess their relationship to arsenic concentrations in water. Our analysis indicates that arsenic concentrations in tissue and arsenic BAFs may be power functions of arsenic concentration in water. A power function indicates that the highest BCF values may occur at low background levels and may decrease as environmental concentrations increase above the ambient range.

Key Words: arsenic, bioaccumulation, ambient water quality criteria, fish consumption.

INTRODUCTION

The ambient water quality criteria (AWQC) for arsenic for protection of human health are currently 0.14 μg/L for ingestion of fish alone and 0.018 μg/L for ingestion of fish and water. These values are at or below background concentrations for arsenic in fresh, estuarine, or marine water. Consequently, there is current

Received 3 August 2005; revised manuscript accepted 10 November 2005.
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Human and Ecological Risk Assessment, 13: 946–965, 2007

ISSN: 1080-7039 print / 1549-7680 online
DOI: 10.1080/10807030701506454

Variation of Total and Speciated Arsenic in Commonly Consumed Fish and Seafood

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ABSTRACT

This article compiles available data and presents an approach for predicting human intakes of inorganic arsenic (As_i), monomethylarsonic acid (MMA), and dimethylarsinic acid (DMA) from marine, estuarine, and freshwater seafood when only total arsenic (As_{tot}) concentrations are reported. Twenty studies provided data on total arsenic (As_{tot}) and As_i. Mean As_i concentrations were approximately 10 to 20 ng/g wet weight (ww) in freshwater, anadromous, and marine fish, whereas crustaceans and molluscs had mean As_i concentrations of 40 to 50 ng/g ww. Thirteen studies provided data for MMA and DMA. MMA was seldom detected, whereas DMA averaged 10 ng/g ww in freshwater fish, and 45 to 95 ng/g ww in anadromous fish, marine fish, crustaceans, and molluscs. There was little correlation between As_{tot} concentrations and As_i concentrations; however, when only As_{tot} data are available to assess health risks from arsenic in seafood, these data could support conservative, upper end estimates of the percent of As_{tot} likely to be As_i. For marine and estuarine fish, and crustaceans and molluscs 2–3% of As_{tot} was As_i at the 75th percentile of the dataset. For freshwater fish As_i was 10% of As_{tot} at the 75th percentile. Due to the nonlinearity and low carcinogenic potency of DMA, the reported DMA concentrations should not contribute substantially to potential health risks from arsenic in seafood.

Key Words: inorganic arsenic, dimethylarsinic acid, monomethylarsonic acid, ambient water quality criteria, fish consumption, seafood arsenic.

INTRODUCTION

Total arsenic concentrations have historically been used to estimate arsenic intake from fish and seafood; however, it has long been known that the majority of arsenic in marine organisms is in relatively nontoxic forms such as arsenobetaine. Thus, total arsenic concentrations in fish are not accurate predictors of the intake of other forms of arsenic. More recent studies have reported total and speciated forms of arsenic,

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PERGAMON

Food and Chemical Toxicology 37 (1999) 839–846

Food and Chemical Toxicology

www.elsevier.com/locate/foodchemtox

Research Section

A Market Basket Survey of Inorganic Arsenic in Food

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(Accepted 7 February 1999)

Abstract—Dietary arsenic intake estimates based on surveys of total arsenic concentrations appear to be dominated by intake of the relatively non-toxic, organic arsenic forms found in seafood. Concentrations of inorganic arsenic in food have not been not well characterized. Accurate dietary intake estimates for inorganic arsenic are needed to support studies of arsenic's status as an essential nutrient, and to establish background levels of exposure to inorganic arsenic. In the market basket survey reported here, 40 commodities anticipated to provide at least 90% of dietary inorganic arsenic intake were identified. Four samples of each commodity were collected. Total arsenic was analysed using an NaOH digestion and inductively coupled plasma–mass spectrometry. Separate aliquots were analysed for arsenic species using an HCl digestion and hydride atomic absorption spectroscopy. Consistent with earlier studies, total arsenic concentrations (all concentrations reported as elemental arsenic per tissue wet weight) were highest in the seafoods sampled (ranging from 160 ng g in freshwater fish to 2360 ng g in saltwater fish). In contrast, average inorganic arsenic in seafood ranged from less than 1 ng g to 2 ng g. The highest inorganic arsenic values were found in raw rice (74 ng g), followed by flour (11 ng g), grape juice (9 ng g) and cooked spinach (6 ng g). Thus, grains and produce are expected to be significant contributors to dietary inorganic arsenic intake.

Keywords: inorganic arsenic; dietary exposures; arsenic in food.

Abbreviations: DMA = dimethylarsenic acid; MMA = monomethylarsonic acid.

INTRODUCTION

Arsenic has been detected in most foods tested. Although arsenic may be present in foods in a variety of organic compounds as well as in inorganic forms, most studies have reported only total arsenic concentrations. Based on studies in laboratory animals, inorganic arsenic may be a required nutrient for humans; however, the required intakes and the intakes from typical diets are not well characterized (Uthus, 1994a,b; Uthus and Seaborn, 1996). During the last two decades, much progress has been made in understanding the forms and concentrations of arsenic in some foods. The primary focus of prior research has been on arsenic in aquatic organisms, many of which contain total arsenic concentrations two to three orders of magnitude greater than total arsenic concentrations in foods of terrestrial origin (Jelinek and Corneliussen, 1977; Schroeder and Balassa, 1966).

Studies of the arsenic forms found in finfish and shellfish have demonstrated that most arsenic in these foods occurs as methylated arsenic compounds, with only small amounts of inorganic arsenic present (Buchet *et al.*, 1994; Francesconi and Edmonds, 1994; Phillips, 1994; Yost *et al.*, 1998). Inorganic arsenic is not formed after ingestion of these compounds (Buchet *et al.*, 1994, 1996), indicating little or no metabolism in humans to the most toxic forms of arsenic. The complex arsenic compounds that predominate in marine organisms are much less acutely toxic than soluble inorganic arsenic compounds, with arsenobetaine (the predominant compound in finfish) being virtually non-toxic (Shiomi, 1994; Yamauchi and Fowler, 1994). Monomethylarsonic (MMA) and dimethylarsenic (DMA) acids are also less acutely toxic than the

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0278-6915/99/$ - see front matter
PII: S0278-6915(99)00073-3

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EXPERTISE

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CREDENTIALS

PhD, Toxicology, University of Cincinnati

BA, Molecular Biology, Wellesley College

Board Certified in Toxicology, American Board of Toxicology (Diplomate 1986, ongoing recertification current)

Rosalind has more than 25 years of experience in assessing human health effects and exposures from chemical substances. She has conducted numerous site risk assessments under CERCLA, RCRA and state laws. Rosalind is an internationally-recognized expert on evaluation of exposures to arsenic and metals. She has directed research on the bioavailability of metals from soil and dietary exposures to arsenic and metals. Rosalind has served on numerous peer review panels for US agencies, Canadian ministries and other entities, and has been a member of three National Research Council committees.

EXPERIENCE HIGHLIGHTS

- Directed numerous evaluations of chemical toxicity, derivation of risk-based exposure levels, health risk assessments for cancer and noncancer end points, and multimedia assessments of exposure to environmental chemicals for diverse mining and mineral processing sites, manufacturing sites, landfills, incinerators, and other sources of exposure.
- Currently serving on the Washington Department of Ecology Model Toxics Control Act Science Panel, as well as on the editorial board of Human and Ecological Risk Assessment.
- Completed numerous publications and invited talks on bioavailability at international conferences and workshops.
- Directed the development of guides on the evaluation of bioavailability of metals in soil for the US Department of Defense and the Ontario Ministry of the Environment.
- Conducted diverse product and community exposure and risk assessments.
- Provided expert opinions for diverse litigation matters.
- Received the 2007 Lifetime Achievement Award, given by the Annual International Conference on Sediments Soils and Water. The award was presented under the auspices of the University of Massachusetts for significant contribution to a field of science or engineering, as assessed by the level and longevity of contributions, assumption of responsibilities and volunteerism for charitable organizations and not-for-profit groups.

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April 26, 2011

The Honorable Thomas B. Saviello
The Honorable James Hamper
Co Chairs
Joint Standing Committee on Environment
And Natural Resources
State of Maine Legislature
Cross State Office Building, Room 216
Augusta, Maine 04333

RE: LD 515 – An Act To Review State Water Quality Standards

Dear Senator Saviello and Representative Hamper:

I am submitting these comments on behalf of both of Verso's Maine Mills in Jay and in Bucksport. We are submitting this letter in support of revisions to Maine's Ambient Water Quality Criteria for inorganic arsenic as proposed in LD 515. Verso is particularly interested in the setting of a new freshwater and saltwater criteria for arsenic based on a risk level of 10^{-4} resulting in a water quality criteria of 1.2 ppb (parts per billion) and 2.8 ppb respectively. This as opposed to the current 10^{-6} risk factor, resulting in a fresh water quality criteria of 0.012 ppb. Verso is also in support of revising section 420 to allow the reduction of mercury sampling to once per year and the clarification that metals limits shall be expressed only as mass-based limits. Lastly Verso supports the provision in LD 515 that allows the Department to utilize any allocation set aside for future growth if the use of that allocation would avoid a reasonable potential finding or an exceedance of applicable ambient water quality standards.

As stated above, Maine's current fresh water quality criteria (WQC) for inorganic arsenic is 0.012 ug/L. There are twenty-nine states with inorganic arsenic WQC ranging from 5 ppb to 24 ppb with a majority of States at 10 ppb – 833 times greater than the State of Maine.

A WQC criteria based on a risk factor of 10^{-4} is based on sound science and remains protective of the environment, while allowing dischargers, who in reality have no control of the discharge of arsenic, to remain in compliance. Arsenic is naturally occurring and is found in the bedrock of Maine, as a result it occurs in Maine's surface and groundwaters. Arsenic is also found in many of the raw materials utilized in the papermaking process such as wood fiber, clays and fillers. Dischargers have little or no control of the amount of arsenic found in their effluent, there is little or no predictability in what any particular test result might be, nor is there any practicable treatment technology to employ to reduce the discharge of arsenic.

If the Maine DEP continues the process of placing arsenic limits in licenses based on 10^{-6} risk factors, industrial and municipal facilities that have never been in non-compliance before will be found to be out of compliance with little or no effective means to meet compliance.

Current levels of arsenic found in many of Maine's public and private drinking water supplies would exceed the ambient water quality limits proposed in LD 515 based on the 10^{-4} risk factor and a resulting water quality criteria of 1.2 ppb. Put simply, the proposed water quality criteria in LD 515 is still far more stringent than Maine's drinking water standards for the protection of human health.

Passing LD 515 as proposed will not result in an increase in arsenic discharged and it will not have a negative impact on the environment. The science shows that LD 515 will be protective of aquatic and human life and will not needlessly put many industrial and municipal dischargers in an out of compliance situation with little or no means of control.

Verso urges the committee to vote this legislation as ought to pass.

Respectfully submitted,

Kenneth Gallant
Manager, Environment

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TESTIMONY AGAINST LD-515
"AN ACT TO REVIEW STATE WATER QAULITY STANDARDS"
COMMITTEE ON ENVIRONMENT AND NATURAL RESOURCES
APRIL 26, 2011

MR. SENATE CHAIR, SAVAIELLO, HOUSE CO-CHAIR, HAMPER DISTINGUISHED MEMBERS OF THE COMMITTEE. MY NAME IS WAYNE T. MITCHELL AND I AM THE REPRESENTATIVE TO THE LEGISLATURE FOR THE PENOBSCOT NATION. I COME BEFORE YOU TODAY TO DISCUSS THE BILL BEFORE YOU LD-515 AND TO ENLIGHTEN YOU AS TO THE CONCERNS AND CONSEQUENCES THIS BILL HAS FOR THE PENOBSCOT NATION AND HER PEOPLE.

ALTHOUGH THIS IS A CONCEPT DRAFT BILL AND THE PARAMETERS WILL BE WORKED OUT IN THIS PUBLIC HEARING AND WORK SESSION WE HAVE CONCERNS ABOUT RELAXING THE AMBIENT SURFACE WATER QUALITY CRITERIA FOR ARSENIC. IT IS MY UNDERSTANDING THAT THERE ARE CERTAIN DISCHARGERS OF EFFLUENT INTO OUR RIVERINE SYSTEMS WHO ARE STRUGGLING TO MEET THE CURRENT STANDARDS. THE DILEMMA IS THAT SOME WASTEWATER TREATMENT PLANTS HAVE SOURCE WATER WITH ARSENIC LEVELS THAT EXCEED THE SURFACE WATER CRITERIA. I AM IN NO WAY AN EXPERT IN THIS AREA NOR DO I PRETEND TO BE, HOWEVER, IT SEEMS TO ME THAT WHEN WE ARE TALKING ABOUT HUMAN HEALTH AND THE RISKS POSED BY ADJUSTING OR RELAXING THE CRITERIA ONLY ADDS TO THE PROBABLE HEALTH EFFECTS ON OUR PEOPLE. HUMAN HEALTH CRITERIA FOR SURFACE WATER CANNOT BE BASED SOLEY ON HUMAN CONSUMPTION OF DRINKING WATER AS THE PATHWAY FOR ENTERING THE HUMAN BODY. EATING ACQUATIC ORGANISMS SUCH AS FISH IS ANOTHER PATH THAT BIOACCUMULATE ARSENIC. AS SUCH TO LOWER THE STANDARD OR RELAX IT TO WHAT IS BEING PROPOSED WOULD CHANGE THE ACCEPTABLE CANCER RISKS LEVEL PROTECTION FROM 1 IN A MILLION TO 1 IN 10,000. IS THAT TRULY WHAT THIS STATE WANTS TO DO TO ITS CITIZENS?

WE ARE OPPOSED TO THIS BILL AND ANY RELAXATION OF THE ARSENIC STANDARDS BECAUSE THERE IS INSUFFICIENT INFORMATION FOR THE PEOPLE AFFECTED BY THIS BILL FOR OPEN AND THOROUGH VETTING.

SECONDLY, THE BILL IS UNNECESSARY DEPARTMENT RULE 069 CHAPTERS 584 "SYRFACE WATER QUALITY CRITERIA FOR TOXIC POLLUTANTS ALRADY PROVIDES THE PROCESS FOR ALTERNATIVE STATEWIDE SPECIFIC CRITERIA. LD 515 APPEARS ON ITS FACE TO BE AN ATTEMPT TO CIRCUMVENT THE RULEMAKING AND PUBLIC PARTICIPATION PROCESS ALREADY ESTABLISHED. CHAPTER 584 STATES THAT ALTERNATIVE STATEWIDE CRITERIA"....MUST BE AS PROTECTIVE AS EPA'S WATER QUALITY CRITERIA. SUCH CRITERIA MUST ALSO BE PROTECTIVE OF THE MOST SENSITIVE DESIGNATED AND EXSISTING USES OF THE WATER BODY,INCLUDING, BUT NOT LIMITED TO, HABITAT FOR FISH AND OTHER ACQUATIC LIFE, HUMAN CONSUMPTION OF FISH AND DRINKING WATER SUPPLY AFTER TREATMENT"

RELAXING THEACCEPTABLE CANCER RISK FACTOR OR OTHERWISE RELAXING THE HUMAN HEALTH SURFACE WATER CRITERIA FOR ARSNEIC VIOLATES THE PENOBSCOT NATIONS SUSTENANCE FISHING RIGHTS AND THREATENS THE OVERALL HEALTH OF TRIBAL PEOPLE. BECAUSE TRIBAL PEOPLE CONSUME SIGNIFICANTLY MORE FISH AND ACQUATIC ORGANISMS THAN THE GENERAL PUBLIC OR SPORTS PUBLIC, WEAKING THE ARSENIC CRITERIA WOULD PUT PENOBSCOT PEOPLE AT AN UNACCEPTABLE AND MUCH HIGHER RISK. FOR EXAMPLE, AT MODERATE LEVEL FISH CONSUMPTION RATES OF 286g/DAY DOCUMENTED IN THE "WABANAKI TRADITIONAL CULTURAL LIFEWAYSEXPOSURESCENARIO(http://www.epa.gov/ne/govt/tribes/pdfs/DICTA.pdf) RELAXING THE ARSENIC CRITERIA TO THE LEVEL PROPOSED WOULD EXCEE 1X10 TO THE NEGATIVE 4 CANCER RISK FOR TRIBAL MEMBERS. EPA'S AMBIENT WATER QUALITY METHODS RECOMMENDS USING 1X10TO THE NEGATIVE 6 AS AN APPROPRIATE CANCER RISK FOR THE GENERAL POPULATION AND INDIICATES" IN CASES WHERE FISH CONSUMPTION AMONG HIGHLY EXPOSED POPULATION GROUPS IS OF A MAGNITUDE 1X10 TO THE NEGATIVE 4 RISK LEVEL WOULD BE EXCEEDED, A MORE PROTECTIVE RISK LEVEL SHOULD BE CHOSEN" (EPA METHODOLOGY FOR DERIVING AMBIENT WATER QUALITY CITERIA FOR PROTECTION OF HUMAN HEALTH, 2000).

THANK YOU FOR LISTENING TO MY TESTIMONY AND I ASK THAT YOU NOT LOWER THE SURFACE WATER STANDARDS ANY FURTHER.

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Commissioner copy

PAUL R. LEPAGE
GOVERNOR

DARRYL N. BROWN
COMMISSIONER

TESTIMONY OF
DARRYL BROWN, COMMISSIONER
MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION

SPEAKING IN SUPPORT OF L.D. 515

AN ACT TO REVIEW STATE WATER QUALITY STANDARDS

SPONSORED BY REPRESENTATIVE THOMAS SAVIELLO

BEFORE THE JOINT STANDING COMMITTEE ON ENVIRONMENT AND NATURAL RESOURCES

DATE OF HEARING: APRIL 26, 2011

Senator Saviello, Representative Hamper, and members of the committee, I am Darryl Brown, Commissioner of the Department of Environmental Protection, speaking in support of L.D. 515 *An Act To Review State Water Quality Standards.* Recently my staff and I have had the opportunity to discuss with interested parties certain aspects of this concept bill and I appreciate the opportunity to work with them to flesh out the details that we see today in Senator Saviello's amendment to the bill.

Maine's water quality standards are an integral part of the State's overall system to protect and improve the waters of the State. In particular, Maine law and Department regulation establish a comprehensive system to ensure that discharges of toxic substances are appropriately regulated.

Section 2 of this bill specifies that the Department shall utilize a 10^{-4} (1 in 10,000) risk level when calculating ambient water quality criteria for inorganic arsenic. This change would modify the State's ambient water quality criterion for inorganic arsenic for the protection of human health for fresh waters from 0.012 parts per billion (ppb) to 1.2 (ppb). It would also modify the State's water quality criterion for inorganic arsenic for the protection of human health for marine waters from 0.028 (ppb) to 2.8 (ppb). This change would make the State's ambient water quality criteria for inorganic arsenic 100 times less stringent than it is now. While such a change may seem at first concerning, there are several reasons why the Department supports this change. This is a complex issue with many aspects to it, so in the interest of time I will limit the details in my testimony and we will be able to provide a more in depth discussion at the work session. However, some background information is warranted in my testimony today.

BACKGROUND:

In 2005 the Department adopted the Environmental Protection Agency's (EPAs) most recent human health criteria for inorganic arsenic. Inorganic arsenic is classified by EPA as a human carcinogen. The Department utilizes the human health inorganic arsenic water quality criteria when establishing inorganic arsenic discharge limits in waste discharge permits. These discharge limits are currently established as a report-only limit (that is they are not enforceable) until such time as the EPA approves a test method for inorganic arsenic.

The inorganic arsenic criteria are derived from a formula that considers a variety of factors regarding arsenic and a theoretically exposed person. The factors include a cancer potency factor, a cancer risk level, a bioconcentration factor, an assumed body weight, and an assumed water and fish consumption rate. Changing any of these factors will change the final human health water quality criteria.

Some of these factors, such as body weight and water consumption rate, are standard commonly accepted factors for risk assessment. Other factors, such as the cancer potency factor and the bioconcentration factor are based on the inorganic arsenic guidance from EPA and are subject to change as additional research is conducted. One factor, the fish consumption rate, is specific to Maine and is based on the 97th percentile for Maine recreational anglers who report they consume freshwater

fish caught in Maine lakes, streams, ponds, and rivers. This Maine based fish consumption rate of 32.4 grams per day is designed to protect the subpopulation of recreational anglers that frequently consume sport-caught fish and is higher than the current national default fish consumption rate of 6.5 grams per day used by EPA for arsenic. The final factor, the cancer risk level, may, based on EPA guidance, be adjusted within a normally accepted range as a matter of policy in a risk management decision. This is what is proposed in Section 2 of the bill.

CHANGES ARE NECESSARY:

Why should the legislature consider such a change? Shortly after the adoption of the inorganic arsenic criteria in 2005, the regulated community began to voice concern regarding the technical ability to meet inorganic arsenic waste discharge limits once they are established as enforceable limits. A review by the Department of available arsenic treatment technologies reveals that there is little to no implementation of full scale wastewater treatment technologies for arsenic. There is however data available on drinking water treatment technologies. Based on this data it appears that treating wastewater effluent to meet current arsenic discharge limits is likely not technologically or financially feasible.

It is worth noting that the current drinking water standard for arsenic under federal and state regulations is 10 ppb, or 833 times higher than the freshwater ambient water criterion currently established in Department rule. The primary difference between the drinking water standard and the ambient criterion is attributable to the different approaches used under the Safe Drinking Water Act and the Clean Water Act to establish standards. The drinking water standard was established based on a risk benefit approach that considered the available arsenic treatment technology and its cost; the ambient water quality criterion was not.

The current ambient water quality criteria were established with an excess cancer risk level of 1 in 1,000,000. The proposed criteria in LD 515 would be established using a cancer risk level of 1 in 10,000. Determining what is an acceptable degree of risk after considering all of the issues related to the inorganic arsenic criteria is an appropriate policy decision for the legislature to make.

It is worth noting that this issue is not unique to Maine. Ambient arsenic criteria differ widely across the country. Many states utilize the current federal drinking water standard of 10 ppb. Some use the prior federal drinking water standard of 50 ppb. Others have adopted the EPA ambient criteria and modified them based on state specific factors for fish consumption or an alternative cancer risk factor.

You should be aware that under the Clean Water Act a change in water quality criteria, such as proposed by this bill, would require approval by EPA in order for it to become effective. In order to approve the revised criteria EPA will require a demonstration from the Department that sensitive subpopulations in Maine are not exposed to a cancer risk greater than 1 in 10,000. The Department believes that this demonstration can be made given the State's use of a higher fish consumption rate than the national guidance, and provisions in the Department's water toxics rule that allows for site specific criteria to be developed for distinct subpopulations that may consume higher amounts of fish.

The Department believes that the proposed inorganic arsenic criteria, while less stringent than the current criteria, is still appropriately protective and addresses the very real issue of what is technologically and financially achievable. You should also note that a change in the current criteria does not mean that we will see an increase in the amount of arsenic discharged or an increase in the amount of arsenic that people are exposed to. We will most likely continue to experience the same levels that we currently see.

My last comment on the inorganic arsenic criteria is that this issue is directly related to another bill, L.D. 510 *An Act to Exclude Shellfish Processing Facilities from Arsenic Wastewater Testing* that was heard at public hearing on March 23rd. I suggest that the work sessions for these two bills be scheduled back to back.

There are other aspects of this bill that I will briefly comment on now and provide additional details as needed at the work session.

Section 1 provides the Department the ability to reduce mercury testing for discharges if there is at least five years of test data. The Department has acquired a significant amount of mercury data since 1998 when testing was established and in many cases believes that less testing is appropriate.

Section 3 would allow the Department flexibility in the use of any allocation set aside for future growth, such as the water quality reserve specified in Department Regulation Chapter 530, Surface Water Toxics Control Program, when calculating discharge limits for toxics. The Department has acquired a significant amount of experience in establishing toxics limits since Chapter 530 was promulgated in 2005 and believes that this additional flexibility is reasonable.

Section 4 specifies that permit limitations for metals be established only as mass based limits. Department Regulation Chapter 530, Surface Water Toxics Control Program specifies that metal limits must be established as both mass based and concentration based limits. The Department has acquired a significant amount of experience in establishing toxics limits since Chapter 530 was promulgated in 2005 and believes that concentration based limits are not necessary for the protection of water quality as toxicity is a function of the mass discharged under critical conditions. In addition, it is recognized that most treatment facilities are not specifically designed for the removal of metals and therefore establishment of a concentration based limit may not be appropriate. Therefore, the Department believes that this change is reasonable.

I appreciate the opportunity to provide our comments and would be happy to answer any questions or provide additional information.

JANET T. MILLS
ATTORNEY GENERAL

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EXHIBIT
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January 9, 2013

Ann H. Williams
Senior Assistant Regional Counsel
U.S. EPA – Region I
5 Post Office Square – Suite 100
Boston, Massachusetts 02109-3912

Re: **Water Quality Legislation**

Dear Ann:

I have been asked by the MEDEP to review several amendments to Maine statutes in order to certify changes to Maine's water quality standards. As required by 40 CFR § 131.6(e), I certify that the following statutory amendments were duly adopted pursuant to State law.

2011-2012 Legislative Session

- PL 2011, c. 194 (LD 515), "An Act to Review State Water Quality Standards." This law became effective September 28, 2011.

The Attorney General joins in the request of MEDEP Commissioner Aho that EPA approve the new and amended water quality standards unconditionally, and without distinction as to Indian waters. *See Maine v. Johnson*, 498 F.3d 37, 43 (1st Cir. 2007). To the extent EPA does anything other than unconditionally approve the enclosed standards as effective throughout the State, we also ask that EPA provide a specific explanation of the legal basis for the refusal to grant that unconditional approval. To the extent it is EPA's position that Maine's duly adopted water quality standards do not apply to waters within Indian Territory, please explain EPA's position as to what standards are currently applicable to such waters. EPA's failure to explain its position on these issues in recent years has complicated the job of those responsible for implementing the Clean Water Act in Maine, and the job of those responsible for complying with it as well. It has generally created confusion where there should be none.

Pursuant to 40 CFR 131.21, we look forward to EPA's review and approval. If I can be of further assistance, please do not hesitate to contact me.

Sincerely,

Gerald D. Reid
Assistant Attorney General
Chief, Natural Resources Division

EXHIBIT
tables
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Chapter 584 Surface Water Quality Criteria for Toxic Pollutants

SUMMARY: This rule establishes ambient water quality criteria for toxic pollutants in the surface waters of the State. The rule also sets forth procedures that may be used to determine alternative statewide criteria or site-specific criteria adopted as part of a licensing proceeding.

1. **Criteria and Applicability.** The ambient water quality criteria established by this rule are applicable to all surface waters of the State. These criteria are intended to prevent the occurrence of toxic pollutants in toxic amounts as prohibited by both the US Clean Water Act and State law and protect aquatic life and human health. Aquatic life criteria are intended to assure that toxic pollutants are not present in concentrations or amounts that would cause acute and or chronic adverse impacts on organisms in, on or using the surface waters. Human health criteria are intended to assure that toxic pollutants are not present in concentrations or amounts that would cause adverse impact to persons who eat organisms or drink water taken from the surface waters. In the case of marine waters the consumption of water will not be considered for application of human health criteria.

2. **Narrative Water Quality Criteria.** Except as naturally occurs, surface waters must be free of pollutants in concentrations which impart toxicity and cause those waters to be unsuitable for the existing and designated uses of the water body.

3. **Numerical Water Quality Criteria**

A. Statewide Criteria

(1) Statewide Criteria for toxic pollutants with national water criteria. Except as naturally occur, levels of toxic pollutants in surface waters must not exceed federal water quality criteria as established by USEPA, pursuant to Section 304(a) of the Clean Water Act, or alternative criteria established below.

Statewide criteria are contained in Appendix A of this rule.

(2) Alternative Statewide Criteria. Alternative statewide criteria must be adopted through rulemaking. Alternative statewide criteria must be based on sound scientific rationale and be as protective as EPA's water quality criteria. Such criteria must also be protective of the most sensitive designated and existing uses of the water body, including, but not limited to, habitat for fish and other aquatic life, human consumption of fish and drinking water supply after treatment. A proposal for alternative statewide criteria must be initiated in accordance with petition for rulemaking provisions of the State Administrative Procedures Act, 5 M.R.S.A., Section 8055, and include a thorough literature search of the properties of the toxicant, including but not limited to its toxicity, carcinogenicity, teratogenicity, mutagenicity, bioaccumulation/bioconcentration, and regulation by other states or foreign countries. Any such proposal must also take into consideration, at a minimum, the following:

(a) Aquatic Life Criteria. Physical, chemical or biological conditions found in Maine waters that differ from the information used as the basis for national criteria from the USEPA. When toxicity testing is to be done, the procedures in 3(B)(1) will be used. Ambient data must be collected in general conformance with Chapter 530, section 4(D) and have sufficient geographic distribution to reflect variation of the

characteristics in question. Where discharges may affect the factors used to determine water quality criteria, significant sources representative of the pollutant, characteristics and geographic distribution will be evaluated as part of a proposal.

(b) Human Health Criteria. Changes to statewide criteria for the protection of human health must be supported by information following the general methods and considerations specified by USEPA in "Revisions to the Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (2000)," EPA-822-B-00-004, USEPA, Office of Science and Technology, Washington, D.C., 65 Federal Register No. 214, pp. 66443-66482, November 3, 2000. The Board shall consider this information and information provided by the Department of Human Services.

The Board may request additional materials and shall consider all relevant information when determining whether to adopt alternative statewide criteria.

(3) Statewide criteria for toxic pollutants lacking national criteria. The requirements of section 3(A)(2) also apply to the adoption of criteria for toxic pollutants not having water quality criteria established by USEPA, pursuant to Section 304(a) of the Clean Water Act.

B. Site-Specific Criteria. Site-specific numerical criteria for a toxic substance reflecting specific circumstances different from those used in, or not considered in the derivation of the statewide criteria, or for toxic pollutants lacking national criteria, must be adopted by the Board only as part of a waste discharge license proceeding, pursuant to 38 MRSA Sections 413, 414, and 414-A. Site-specific criteria must be based on sound scientific rationale, be as protective as federal water quality criteria and must be protective of the most sensitive designated and existing uses of the water body, including, but not limited to, habitat for fish and other aquatic life, human consumption of fish and drinking water supply after treatment.

Establishment of site-specific criteria must be initiated with a request that the Board assume jurisdiction for issuance of a license. Where the Department finds a request for site-specific criteria may affect other sources discharging to the same waterway, it may, pursuant to 38 MRSA, Section 414-A(5)(A), reopen for modification those licenses for consideration in the same proceeding. The information necessary to ensure that criteria are adequately evaluated must be submitted by a person requesting alternative criteria. The adequacy of this information shall be determined by the Board and may include, among other things, a literature search, user surveys and consumption rate calculations. A literature search of the properties of toxicants includes, but is not limited to, its toxicity, carcinogenicity, teratogenicity, mutagenicity, bioaccumulation/bioconcentration, and regulation by other states or foreign countries. Requests must provide information identifying specific uses of the water body in question, and any other relevant site-specific circumstance or information different from those used, or any not considered, in the derivation of the statewide criteria. Relevant information includes such things as sensitive or unique physical, chemical or biological conditions of the waterbody, rare or significant plant or wildlife communities and habitats located in the water body, or human populations having distinct uses or needs with regard to the water body.

Any request to the Board to establish site-specific criteria must also include, at a minimum, the following. A plan of study must be submitted to the Department for review and approval prior to the beginning of the studies, and may include the consideration of existing relevant scientific information as well as proposals for site-specific investigations.

(1) Aquatic Life Criteria

(a) Minimum requirements include toxicity tests conducted generally according to the USEPA Water Quality Standards Handbook: Second Edition, EPA-823-B-94-005-a, USEPA, Office of Water, Washington, DC, August, 1994, and applicable Water-effect Ratio Guidance or other guidance for development of site specific criteria approved by the Department.

(b) For complex effluents with more than one potentially toxic pollutant, both dilution waters (receiving water and laboratory water) must be spiked with all pollutants present in the effluent in significant amounts, except the pollutant of interest, or the whole effluent at levels representative of the calculated receiving water concentrations at the appropriate design flow. Pollutants present in significant amounts relative to toxic levels must be determined by means of periodic testing within two years of submitting the plan of study to the Department. The pollutant of interest must be added at various concentrations bracketing the target concentration (the existing or anticipated criterion) to determine an appropriate site-specific criterion. This procedure must be repeated for each pollutant for which site-specific criteria are to be proposed.

(c) For discharges to freshwater, the water flea (*Ceriodaphnia dubia*) reproductive and survival test, and the brook trout (*Salvelinus fontinalis*), or other salmonid approved by the Department, survival and growth tests must be conducted. For discharges to marine waters, Mysid shrimp (*Mysidopsis bahia*) survival test, and the sea urchin (*Arbacia punctulata*) fertilization test must be conducted.

(d) Results should be based on measured concentrations.

(e) For heavy metal tests, the metal must be added in the form of inorganic salts of relatively high solubility, such as nitrate salts or in some cases, chloride or sulfate salts.

(f) Sufficient testing must be conducted to properly characterize seasonal variations and the water quality criteria of concern. Receiving water and effluent sampling must be representative of expected conditions and exclude periods of floods, storm events and abnormal operation of the discharge source.

(2) Human Health Criteria. Persons requesting site specific criteria for the protection of human health must provide information following the general methods and considerations specified by USEPA in "Revisions to the Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (2000)," EPA-822-B-00-004, USEPA, Office of Science and Technology, Washington, D.C., 65 Federal Register No. 214, pp. 66443-66482, November 3, 2000. The Board shall consider this information and information provided by the Department of Human Services. In determining if site specific criteria are appropriate, the Board shall first evaluate whether

there is an identifiable population(s) using a water body whose use(s) is distinct from that of the population considered when establishing the statewide criteria. If the Board identifies such a population, it shall consider activities or customs that would constitute a use of the water body substantially different in type or extent than that upon which statewide criteria are based. The Board shall consider, among other things, the following:

(a) Studies designed and implemented to provide accurate information regarding the fact and extent of specific human activities that create a potential exposure to toxics in the water body, including such things as the rate of consumption of organisms, use of a water body as a drinking water supply, recreation in and on the water, and other specific uses of the water body established by local cultural or commercial practices;

(b) The importance of organisms affected by a toxic substance, taking into consideration their places in the food chain and the degree to which they are used or consumed by humans;

(c) Scientific evidence typically relied upon by experts in the field of toxicology showing the potential effect of a toxic substance in the discharge that is the subject of the licensing, on human health, given a particular established use of the water body; and

(d) Unique characteristics of the water body or organisms depending on it that effect exposure of humans to toxics in the water body.

4. **Risk levels.** For any pollutant believed to be carcinogenic, a risk level that would result, at most, in one additional cancer per one million people (risk of 1×10^{-6}) exposed to the carcinogen must be used in determining the human health criterion. Notwithstanding the above, the Department shall utilize a 10^{-4} risk level when calculating ambient water quality criteria for inorganic arsenic.

5. The following assumptions have been used to determine the statewide criteria contained in Appendix A of this rule.

A. **Form of metals.** All metals criteria must be considered as total metal.

NOTE: Persons may request that the Department express criteria for metals as the dissolved form by submitting the appropriate information to allow recalculation of relative toxicity using conversion factors and translator procedures published by EPA: "The Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion", EPA 823-B-96-007, USEPA, Office of Water, Washington, DC, June 1996.

B. **Ambient water physical characteristics.** Fresh water quality must be calculated using a pH of 7.0, a temperature of 25 degrees Celsius, and a hardness of 20 mg/L. Marine water quality must be calculated using a pH of 8.0, a temperature of 20 degrees Celsius, and a salinity of 30 parts per thousand. Estuarine water quality must be calculated using a pH of 8.0, a temperature of 20 degrees Celsius and a salinity of 20 parts per thousand.

NOTE: These characteristics, however, may vary depending on the location of the discharge. The relative criteria for a pollutant subject to these considerations may be recalculated in any given licensing proceeding using the actual local ambient physical water characteristics. See Chapter 530.

C. Human health assumptions. Human health criteria are determined assuming consumption of 2 Liters of water and 32.4 grams of organisms per day taken from surface waters of the State by a person weighing 70 kg. Notwithstanding the above, when calculating human health criteria for inorganic arsenic, the Department shall utilize a state-wide consumption value of 138 grams of organisms per day.

AUTHORITY: 38 MRSA Sections 341-H, 420, and 464(5)
EFFECTIVE DATE: October 9, 2005 (filing 2005-402, 06-096 Chapter 530.5 repealed and replaced by this rule and Chapter 530)
EFFECTIVE DATE:

Chapter 584. Appendix A. Statewide criteria for toxic pollutants with national water quality criteria for Priority Pollutants and non Priority Pollutants. Patterned after the EPA's National Recommended Water Quality Criteria of November 2002 and December 2003. "FR Cite/Source" refers to the EPA publication from which the criteria are derived. The "Gold Book" is Quality Criteria for Water: 1986. EPA 440/5-86-001.

1. Table I. Criteria for Priority Pollutant listed pursuant to 304(a) of the Clean Water Act. See also the footnotes following this table.

Priority Pollutant	CAS Number	Freshwater		Saltwater		Human Health For Consumption of:		FR Cite/ Source
		CMC (µg/L)	CCC (µg/L)	CMC (µg/L)	CCC (µg/L)	Water and Organisms (ug/L)	Organisms Only (ug/L)	
Antimony	7440360					5.5 B	350 B	65FR66443
Arsenic	7440382	340 A,K	150 A,K	69 A,bb	36 A,bb	~~0.012 M,~~S ~~1.2 M,S,aME~~ 1.3 M,S,aME	~~0.028 M,S~~ ~~2.8 M,S,aME~~ 3.7 M,S,aME	65FR31682 57FR60848
Beryllium	7440417					Z		65FR31682
Cadmium	7440439	0.42 E,K,bb	0.08 E,K,bb	40 bb	8.85 bb	Z		65FR31682 EPA-822-R-01-001
Chromium III	16065831	483 E,K	23.1 E,K			Z Total		EPA820/B-96-001 65FR31682
Chromium VI	18540299	16 K	11 K	1,108 bb	50 bb	Z Total		65FR31682
Copper	7440508	3.07 E,K,cc	2.36 E,K,cc	5.78 cc,ff	3.73 cc,ff	1,300 U		65FR31682
Lead	7439921	10.52 E,bb,gg	0.41 E,bb,gg	221 bb	8.52 bb	Z		65FR31682
Mercury	7439976	See Title 38 MRSA, Sections 420 (1-B) and 413(11)						
Nickel	7440020	120.2 E,K	13.4 E,K	75 bb	8.28 bb	400 B	1,000 B	65FR31682

Priority Pollutant	CAS Number	Freshwater CMC (µg/L)	Freshwater CCC (µg/L)	Saltwater CMC (µg/L)	Saltwater CCC (µg/L)	Human Health For Consumption of: Water and Organisms (ug/L)	Human Health For Consumption of: Organisms Only (ug/L)	FR Cite/ Source
Selenium	7782492	L,R	5.0	291 bb,dd	71 bb,dd	162 Z	2,250	62FR42160 65FR31682 65FR66443
Silver	7740224	0.23 G, E		2.24 G				65FR31682
Thallium	7440280					0.17	0.25	68FR75507
Zinc	7440666	30.6 E,K	30.6 E,K	95 bb	86 bb	6,000 U	14,000 U	65FR31682 65FR66443
Cyanide	57125	22 K,Q	5.2 K,Q	1 Q,bb	1 Q,bb	140 jj	140 jj	68FR75507
Asbestos	1332214					$7x10^6$ fibers/L I		57FR60848
2,3,7,8-TCDD Dioxin	1746016	Also see Title 38 MRSA Section 420(2)				2.7E-9 J	2.8E-9 J	65FR66443
Acrolein	107028	3	3			~~122~~ 3.9 ll	~~157~~ 5.0 ll	~~65FR66443~~ 74FR27535 74FR46587
Acrylonitrile	107131					0.04 B	0.13 B	65FR66443
Benzene	71432					0.58 B	7.55 B	IRIS 01/19/00 65FR66443
Bromoform	75252					4.2B	73 B	65FR66443
Carbon Tetrachloride	56235					0.23 B	0.89 B	65FR66443

Priority Pollutant	CAS Number	Freshwater CMC (µg/L)	Freshwater CCC (µg/L)	Saltwater CMC (µg/L)	Saltwater CCC (µg/L)	Human Health For Consumption of: Water and Organisms (ug/L)	Human Health For Consumption of: Organisms Only (ug/L)	FR Cite/ Source
Chlorobenzene	108907					120 B, U, Z	840 B,U	68FR75507
Chlorodibromomethane	124481					0.40 B	6.94 B	65FR66443
Chloroethane	75003							
2-Chloroethylvinyl Ether	110758							
Chloroform	67663					5.4 P	94 P	62FR42160
Dichlorobromomethane	75274					0.53 B	9.3 B	65FR66443
1,1-Dichloroethane	75343							
1,2-Dichloroethane	107062					0.38 B	19.8 B	65FR66443
1,1-Dichloroethylene	75354					320 Z	3,900	68FR75507
1,2-Dichloropropane	78875					0.50 B	7.9 B	65FR66443
1,3-Dichloropropene	542756					0.34	11.4 B	68FR75507
Ethylbenzene	100414					435	1,150	68FR75507
Methyl Bromide	74839					46 B	800 B	65FR66443
Methyl Chloride	74873							65FR31682
Methylene Chloride	75092					4.6 B	320 B	65FR66443

Priority Pollutant	CAS Number	Freshwater CMC (µg/L)	Freshwater CCC (µg/L)	Saltwater CMC (µg/L)	Saltwater CCC (µg/L)	Human Health For Consumption of: Water and Organisms (ug/L)	Human Health For Consumption of: Organisms Only (ug/L)	FR Cite/ Source
1,1,2,2-Tetrachloroethane	79345					0.16 B	2.2 B	65FR66443
Tetrachloroethylene	127184					0.59	1.77	65FR66443
Toluene	108883					1,200 Z	8,100	68FR75507
1,2-Trans-Dichloroethylene	156605					140 Z	5,500	68FR75507
1,1,1-Trichloroethane	71556					Z		65FR31682
1,1,2-Trichloroethane	79005					0.58 B	8.42 B	65FR66443
Trichloroethylene	79016					2.37	16.2	65FR66443
Vinyl Chloride	75014					0.025	1.32	68FR75507
2-Chlorophenol	95578					55.2 B,U	80.6 B,U	65FR66443
2,4-Dichlorophenol	120832					63.3 B,U	160 B,U	65FR66443
2,4-Dimethylphenol	105679					280 B	460 B,U	65FR66443
2-Methyl-4,6-Dinitrophenol	534521					12.5	155	65FR66443
2,4-Dinitrophenol	51285					68.4 B	2,900 B	65FR66443
2-Nitrophenol	88755							
4-Nitrophenol	100027							

Priority Pollutant	CAS Number	Freshwater CMC (µg/L)	Freshwater CCC (µg/L)	Saltwater CMC (µg/L)	Saltwater CCC (µg/L)	Human Health For Consumption of: Water and Organisms (ug/L)	Human Health For Consumption of: Organisms Only (ug/L)	FR Cite/ Source
3-Methyl-4-Chlorophenol	59507					U	U	
Pentachlorophenol	87865	8.72 F,K	6.69 F,K	13 bb	7.9 bb	0.25 B	1.64 B,H	65FR66443 65FR31682
Phenol	108952					~~21,000 B,U~~ 10,514 B,U,ll	~~93,000 B,U~~ 462,963 B,U,ll	~~65FR43664~~ 74FR27535
2,4,6-Trichlorophenol	88062					0.93 B	1.31 B	65FR66443
Acenaphthene	83329					430 B,U	540 B,U	65FR66443
Acenaphthylene	208968							
Anthracene	120127					7,100 B	22,000 B	65FR66443
Benzidine	92875					0.00006 B	0.0001 B	65FR66443
Benzo(a)Anthracene	56553					0.003 B	0.01 B	65FR66443
Benzo(a)Pyrene	50328					0.003 B	0.01 B	65FR66443
Benzo(b)Fluoranthene	205992					0.003 B	0.01 B	65FR66443
Benzo(ghi)Perylene	191242							

Priority Pollutant	CAS Number	Freshwater CMC (µg/L)	Freshwater CCC (µg/L)	Saltwater CMC (µg/L)	Saltwater CCC (µg/L)	Human Health For Consumption of: Water and Organisms (ug/L)	Human Health For Consumption of: Organisms Only (ug/L)	FR Cite/ Source
Benzo(k)Fluoranthene	207089					0.003 B	0.01 B	65FR66443
Bis2-ChloroethoxyMethane	111911							
Bis2-ChloroethylEther	111444					0.029 B	0.28 B	65FR66443
Bis2-ChloroisopropylEther	108601					1,350 B	35,000 B	65FR66443
Bis2-EthylhexylPhthalate[X]	117817					0.8 B	1.19 B	65FR66443
4-BromophenylPhenylEther	101553							
Butylbenzyl Phthalate[W]	85687					900 B	1,050 B	65FR66443
2-Chloronaphthalene	91587					650 B	850 B	65FR66443
4-ChlorophenylPhenylEther	7005723							
Chrysene	218019					0.003 B	0.01 B	65FR66443
Dibenzo(a,h)Anthracene	53703					0.003 B	0.01 B	65FR66443
1,2-Dichlorobenzene	95501					330	700	68FR75507
1,3-Dichlorobenzene	541731					250	520	65FR31682
1,4-Dichlorobenzene	106467					50	105	68FR75507

Priority Pollutant	CAS Number	Freshwater CMC (µg/L)	Freshwater CCC (µg/L)	Saltwater CMC (µg/L)	Saltwater CCC (µg/L)	Human Health For Consumption of: Water and Organisms (ug/L)	Human Health For Consumption of: Organisms Only (ug/L)	FR Cite/ Source
3,3'-Dichlorobenzidine	91941					0.013 B	0.015 B	65FR66443
Diethyl Phthalate[W]	84662					13,000 B	24,000 B	65FR66443
Dimethyl Phthalate[W]	131113					221,000	600,000	65FR66443
Di-n-Butyl Phthalate[W]	84742					1,400 B	2,400 B	65FR66443
2,4-Dinitrotoluene	121142					0.11	1.83	65FR66443
2,6-Dinitrotoluene	606202							
Di-n-Octyl Phthalate	117840							
1,2-Diphenylhydrazine	122667					0.03 B	0.11 B	65FR66443
Fluoranthene	206440					71 B	75 B	65FR66443
Fluorene	86737					950 B	2,100 B	65FR66443
Hexachlorobenzene	118741					0.0002 B	0.0002 B	65FR66443
Hexachlorobutadiene	87683					0.43 B	9.96 B	65FR66443
Hexachlorocyclopentadiene	77474					39 U	600 U	68FR75507

Priority Pollutant	CAS Number	Freshwater CMC (µg/L)	Freshwater CCC (µg/L)	Saltwater CMC (µg/L)	Saltwater CCC (µg/L)	Human Health For Consumption of: Water and Organisms (ug/L)	Human Health For Consumption of: Organisms Only (ug/L)	FR Cite/ Source
Hexachloroethane	67721					1.04 B	1.78 B	65FR66443
Ideno(1,2,3-cd)Pyrene	193395					0.003 B	0.01 B	65FR66443
Isophorone	78591					35 B	520 B	65FR66443
Naphthalene	91203							
Nitrobenzene	98953					16.7 B	370 B,H	65FR66443
N-Nitrosodimethylamine	62759					0.00069 B	1.63 B	65FR66443
N-Nitrosodi-n-Propylamine	621647					0.005 B	0.27 B	65FR66443
N-Nitrosodiphenylamine	86306					2.23 B	3.24 B	65FR66443
Phenanthrene	85018							
Pyrene	129000					710 B	2,160 B	65FR66443
1,2,4-Trichlorobenzene	120821					25	38	68FR75507
Aldrin	309002	3.0 G		1.3 G		0.000027 B	0.000027 B	65FR31682 65FR66443
alpha-BHC	319846					0.0017 B	0.0026 B	65FR66443

Priority Pollutant	CAS Number	Freshwater		Saltwater		Human Health For Consumption of:		FR Cite/ Source
		CMC (µg/L)	CCC (µg/L)	CMC (µg/L)	CCC (µg/L)	Water and Organisms (ug/L)	Organisms Only (ug/L)	
beta-BHC	319857					0.006 B	0.009 B	65FR66443
gamma-BHC (Lindane)	58899	0.95 K		0.16 G		0.68 Z	0.1	68FR75507
delta-BHC	319868							
Chlordane	57749	2.4 G	0.0043 G,aa	0.09 G	0.004 G, aa	.00044	0.00044	65FR31682 65FR66443
4,4'-DDT	50293	1.1 G,ii	0.001 G,aa,ii	0.13 G,ii	0.001 G,aa,ii	0.00012 B	0.00012 B	65FR31682 65FR66443
4,4'-DDE	72559					0.00012 B	0.00012 B	65FR66443
4,4'-DDD	72548					0.00017 B	0.00017 B	65FR66443
Dieldrin	60571	0.24 K	0.056 K,O	0.71 G	0.0019 G,aa	0.000029 B	0.000029 B	65FR31682 65FR66443
alpha-Endosulfan	959988	0.22 G,Y	0.056 G,Y	0.034 G,Y	0.0087 G,Y	39 B	48 B	65FR31682 65FR66443
beta-Endosulfan	33213659	0.22 G,Y	0.056 G,Y	0.034 G,Y	0.0087 G,Y	39 B	48 B	65FR31682 65FR66443
Endosulfan Sulfate	1031078					39 B	48 B	65FR66443
Endrin	72208	0.086 K	0.036 K,O	0.037 G	0.0023 G,aa	0.032	0.032	68FR75507

Priority Pollutant	CAS Number	Freshwater CMC (µg/L)	Freshwater CCC (µg/L)	Saltwater CMC (µg/L)	Saltwater CCC (µg/L)	Human Health For Consumption of: Water and Organisms (ug/L)	Human Health For Consumption of: Organisms Only (ug/L)	FR Cite/ Source
Endrin Aldehyde	7421934					0.16 B	0.16 B,H	65FR66443
Heptachlor	76448	0.52 G	0.0038 G,aa	0.053 G	0.0036 G,aa	0.000043 B	0.000043 B	65FR31682 65FR66443
Heptachlor Epoxide	1024573	0.52 G,V	0.0038 G,V,aa	0.053 G,V	0.0036 G,V,aa	0.000021 B	0.000021 B	65FR31682 65FR66443
Polychlorinated Biphenyls PCBs:			0.014 N,aa		0.03 N,aa	0.000035 B,N	0.000035 B,N	65FR31682 65FR66443
Toxaphene	8001352	0.73	0.0002 aa	0.21	0.0002 aa	0.00015 B	0.000155 B	65FR31682 65FR66443

Footnotes to Table I:

A. This recommended water quality criterion was derived from data for arsenic (III), but is applied here to total arsenic, which might imply that arsenic (III) and arsenic (V) are equally toxic to aquatic life and that their toxicities are additive. In the arsenic criteria document (EPA 440/5-84-033, January 1985), Species Mean Acute Values are given for both arsenic (III) and arsenic (V) for five species and the ratios of the SMAVs for each species range from 0.6 to 1.7. Chronic values are available for both arsenic (III) and arsenic (V) for one species; for the fathead minnow, the chronic value for arsenic (V) is 0.29 times the chronic value for arsenic (III). No data are known to be available concerning whether the toxicities of the forms of arsenic to aquatic organisms are additive.

B. This criterion has been revised to reflect The Environmental Protection Agency's q1* or RfD, as contained in the Integrated Risk Information System (IRIS) as of May 17, 2002. The fish tissue bioconcentration factor (BCF)from the 1980 Ambient Water Quality Criteria document was retained in each case.

E. The freshwater criterion for this metal is expressed as a function of hardness (mg/L) in the water column. The value given here corresponds to a hardness of 20 mg/L. Also see part 7 below.

F. Freshwater aquatic life values for pentachlorophenol are expressed as a function of pH, and are calculated as follows: CMC = exp(1.005(pH)-4.869);CCC = exp(1.005(pH)-5.134). Values displayed in table correspond to a pH of 7.0.

G. This Criterion is based on 304(a) aquatic life criterion issued in 1980, and was issued in one of the following documents: Aldrin/Dieldrin (EPA 440/5-80-019), Chlordane (EPA 440/5-80-027), DDT (EPA 440/5-80-038), Endosulfan (EPA440/5-80-046), Endrin (EPA440/5-047), Heptachlor (440/580-052), Hexachlorocyclohexane (EPA440/5-80-054), Silver (EPA 440/5-80-071). The Minimum Data Requirements and derivation procedures were different in the

1980 Guidelines than in the 1985 Guidelines. For example, a "CMC" derived using the 1980 Guidelines was derived to be used as an instantaneous maximum. If assessment is to be done using an averaging period, the values given should be divided by 2 to obtain a value that is more comparable to a CMC derived using the 1985 Guidelines.

H. No criterion for protection of human health from consumption of aquatic organisms excluding water was present in the 1980 criteria document or in the *1986 Quality Criteria for Water*. Nevertheless, sufficient information was presented in the 1980 document to allow the calculation of a criterion, even though the results of such a calculation were not shown in the document.

I. This criterion for asbestos is the Maximum Contaminant Level (MCL) developed under the Safe Drinking Water Act.

J. These values are not applicable to bleach karft pulp mills. See 38 M.R.S.A., section 420(2)(I).

K. This recommended criterion is based on a 304(a) aquatic life criterion that was issued in the *1995 Updates: Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water*, (EPA-820-B-96-001, September 1996). This value was derived using the GLI Guidelines (60FR15393-15399, March 23, 1995; 40CFR132 Appendix A); the difference between the 1985 Guidelines and the GLI Guidelines are explained on page iv of the 1995 Updates. None of the decisions concerning the derivation of this criterion were affected by any considerations that are specific to the Great Lakes.

L. The CMC = 1/[(f1/CMC1) + (f2/CMC2)] where f1 and f2 are the fractions of total selenium that are treated as selenite and selenate, respectively, and CMC1 and CMC2 are 185.9 µg/l and 12.83 µg/l, respectively.

M. EPA is currently reassessing the criteria for arsenic.

N. This criterion applies to total PCBs (e.g. the sum of all congener or all isomer or homolog or Aroclor analyses).

O. The derivation of the CCC for this pollutant did not consider exposure through the diet, which is probably important for aquatic life occupying upper trophic levels.

P. Although a new RfD is available in IRIS, the surface water criteria will not be revised until the National Primary Drinking Water Regulations: Stage 2 Disinfectants and Disinfection Byproducts Rule (Stage 2 DBPR) is completed, since public comment on the relative source contribution (RSC) for chloroform is anticipated.

Q. This recommended water quality criterion is expressed as µg free cyanide (as CN)/L.

R. This value for Selenium was announced (61FR58444-58449, November 14, 1996) as a proposed GLI 303(c) aquatic life criterion. EPA is currently working on this criterion and so this value might change substantially in the near future.

S. This recommended water quality criterion refers to the inorganic form only.

U. The organoleptic effect criterion is more stringent than the value for priority toxic pollutants. Also see Part 6.

V. This value was derived from data for heptachlor and the criteria document provides insufficient data to estimate the relative toxicities of heptachlor and heptachlor epoxide.

W. Although EPA has not published a final criteria document for this compound, it is EPA's understanding that sufficient data exist to allow calculation of aquatic criteria. It is anticipated that industry intends to publish in the peer reviewed literature draft aquatic life criteria generated in accordance with EPA Guidelines. EPA will review such criteria for possible issuance as national WQC.

X. There is a full set of aquatic life toxicity data that show that BEHP is not toxic to aquatic organisms at or below its solubility limit.

Y. This value was derived from data for endosulfan and is most appropriately applied to the sum of alpha- endosulfan and beta-endosulfan.

Z. A more stringent MCL has been issued. Also see part 6 below.

aa This criterion is based on a 304(a) aquatic life criterion issued in 1980 or 1986, and in one of the following documents: Aldrin/Dieldrin (EPA 440/5-80-019), Chlordane (EPA 440/5-80-027), DDT (EPA 440/5-80-038), Endrin (EPA 440/5-80-047), Heptachlor (EPA 440/5-80-052), Polychlorinated Biphenyls (EPA 440/5-80-019), Toxaphene (EPA 440/5-86-038). The CCC is currently based on the Final Residual Value (FRV) procedure. Since the publication of the

Great Lakes Aquatic Criteria Guidelines in 1995 (60FR15393-15399, March 23, 1995), the Agency no longer uses the FRV procedure for deriving CCCs for new or revised 304(a) aquatic life criteria. Therefore, the Agency anticipates that future revisions of this CCC will not be based on the FRV procedure.

bb This water quality criterion is based on a 304(a) aquatic life criterion that was derived using the 1985 Guidelines (*Guidelines for Deriving Numerical NationalWater Quality Criteria for the Protection of Aquatic Organisms and Their Uses*, PB85-227049, January 1985) and was issued in one of the following criteria documents: Arsenic (EPA 440/5-84-033), Cadmium (EPA 440/5-84-032), Chromium (EPA 440/5-84-029), Copper (EPA 440/5-84-031), Cyanide (EPA 440/5-84-028), Lead (EPA 440/5-84-027), Nickel (EPA 440/5-86-004), Pentachlorophenol (EPA 440/5-86-009), Toxaphene, (EPA 440/5-86-006), Zinc (EPA 440/5-87- 003).

cc When the concentration of dissolved organic copper is elevated, copper is substantially less toxic and use of Water-Effects Ratios might be appropriate.

dd The selenium criteria document (EPA 440/5-87-006, September 1987) provides that if selenium is as toxic to saltwater fishes in the field as it is to freshwater fishes in the field, the status of the fish community should be monitored whenever the concentration of selenium exceeds 5.0 µg/L in salt water because the saltwater CCC does not take into account uptake via the food chain.

ff This recommended water quality criterion was derived in *Ambient Water Quality Criteria Saltwater Copper Addendum* (Draft, April 14, 1995) and was promulgated in the Interim final National Toxics Rule (60FR22228-222237, May 4, 1995).

gg EPA is actively working on this criterion and so this recommended water quality criterion may change substantially in the near future.

ii This criterion applies to DDT and it metabolites (i.e. the total concentration of DDT and its metabolites should not exceed this value).

jj. This criterion is expressed as total cyanide, even though the IRIS RfD used to derive the criterion is based on free cyanide. The multiple forms of cyanide that are present in ambient water have significant differences in toxicity due to their differing abilities to liberate the CN-moiety. Some complex cyanides require even more extreme condition the refluxing with sulfuric acid to liberate the CN-moiety. Thus these complex cyanides are expected to have little or no 'bioavailability' to humans. If a substantial fraction of the cyanide present in water body is present in a complex form (e.g. $Fe_4[Fe(CN)_6]_3$), this recommended criterion mat be over conservative.

ll. This criterion has been revised to reflect the Environmental Protection Agency's cancer slope factor (CSF) or reference dose (RfD), as contained in the Integrated Risk Information System (IRIS) as of (Final FR Notice June 10, 2009). The fish tissue bioconcentration factor (BCF) from the 1980 Ambient Water Quality Criteria document was retained in each case.

aME As noted in 06-096 CMR 584.4 and CMR 584.5.C, when calculating ambient water quality (human health) criteria for inorganic arsenic, a 10^{-4} risk level and a state-wide consumption value of 138 grams of organisms per day shall be utilized. Other values specific to inorganic arsenic shall include a bioconcentration factor of 26 L/kg, a cancer slope (potency) factor of 1.75 mg/kg/day, and an inorganic factor of 30%. The subject body weight of 70 kg and water consumption rate of 2 L/day remain consistent with human health criteria for other pollutants.

2. Table II. Criteria for Non-Priority Pollutants. See also the footnotes following this table.

Non Priority Pollutant	CAS Number	Freshwater		Saltwater		Human Health For Consumption of:		FR Cite/Source
		CMC (µg/L)	CCC (ug/L)	CMC (µg/L)	CCC (ug/L)	Water and Organisms (µg/L)	Organisms Only (ug/L)	
Aluminum pH 6.5 - 9.0	7429905	750 G	87 G,L					53FR33178
Ammonia	7664417	24,100 D	3,000 D	7,300 D	1,100 D			EPA822-R-99-014 ~~EPA440/5-88-004~~ EPA440-588-004
Barium	7440393					1,000 A		Gold Book
Boron		Narrative Statement – See document						Gold Book
Chloride	16887006	860,000 G	230,000 G					53FR19028
Chlorine	7782505	19	11	13	7.5	C		Gold Book
Chlorophenoxy Herbicide 2,4,5,-TP	93721					10 A		Gold Book
Chlorophenoxy Herbicide 2,4,D	94757					100 A,C		Gold Book
Chloropyrifos	2921882	0.083 G	0.041 G	0.011 G	0.0056 G			Gold Book
Demeton	8065483		0.1 F		0.1 F			Gold Book
Ether, Bis Chloromethyl	542881					0.000079 E	0.00016 E	65FR66443
Guthion	86500		0.01 F		0.01 F			Gold Book
Hexachlorocyclo-hexane-Technical	319868					0.0123	0.0414	~~Gold Book~~ EPA 440/5-80-054

Non Priority Pollutant	CAS Number	Freshwater		Saltwater		Human Health For Consumption of:		FR Cite/Source
		CMC (µg/L)	CCC (ug/L)	CMC (µg/L)	CCC (ug/L)	Water and Organisms (µg/L)	Organisms Only (ug/L)	
Iron	7439896		1000 F			300 A		Gold Book
Malathion	121755		0.1 F		0.1 F			Gold Book
Manganese	7439965					B	100 A	Gold Book
Methoxychlor	72435		0.03 F		0.03 F	100 A,C		Gold Book
Mirex	2385855		0.001 F		0.001 F			Gold Book
Nitrates	14797558					10,000 A		Gold Book
Nitrosamines						0.0008	1.24	Gold Book
Dinitrophenols	25550587					68	2,860	65FR66443
Nonylphenol	84852153	28	6.6	7	1.7			71FR9337
Nitrosodibutylamine,N	924163					0.0061 A	0.118 A	65FR66443
Nitrosodiethylamine,N	55185					0.0008 A	1.24 A	Gold Book
Nitrosopyrrolidine,N	930552					0.016	18.4	65FR66443
Diazanon	333415	0.17	0.17	0.82	0.82			71FR9336
Parathion	56382	0.065 J	0.013 J					Gold Book
Pentachlorobenzene	608935					0.79 E	0.81 E	65FR66443
Sulfide-Hydrogen Sulfide	7783064		2.0 F		2.0 F			Gold Book

Non Priority Pollutant	CAS Number	Freshwater		Saltwater		Human Health For Consumption of:		FR Cite/Source
		CMC (µg/L)	CCC (ug/L)	CMC (µg/L)	CCC (ug/L)	Water and Organisms (µg/L)	Organisms Only (ug/L)	
Tetrachlorobenzene,1,2, 4,5-	95943					0.55 E	0.58 E	65FR66443
Tributyltin TBT		0.46 Q	0.072 Q	0.42 Q	0.0074 Q			~~EPA822-R-03-031~~ 69FR342
Trichlorophenol,2,4,5-	95954					1,300 B,E	2,000 B,E	65FR66443

Footnotes to Table II:

A This human health criterion is the same as originally published in the Red Book (EPA 440/9-76-023, July 1976) which predates the 1980 methodology and did not utilize the fish ingestion BCF approach. This same criterion value is now published in the Gold Book (Quality Criteria for Water: 1986. EPA 440/5-86-001).

B The organoleptic effect criterion is more stringent than the value presented in the non priority pollutant table.

C A more stringent Maximum Contaminant Level (MCL) has been issued by EPA under the Save Drinking Water Act. Refer to drinking water regulations 40CFR141 or Safe Drinking Water Hotline (1-800-426-4791) for values. Also see part 6 below.

D Aquatic life criteria are pH, temperature and/or salinity dependent. See part 7(C) for fresh water and reference document for marine waters. The values presented in the table are based on pH of 7.0 and temperature of 25°C in fresh waters; and pH of 8.0, temperature of 20°C and salinity of 30 parts per thousand in marine waters.

E This criterion has been revised to reflect The Environmental Protection Agency's q1* or RfD, as contained in the Integrated Risk Information System (IRIS) as of May 17, 2002. The fish tissue bioconcentration factor (BCF) used to derive the original criterion was retained in each case.

F The derivation of this value is presented in the Red Book (EPA 440/9-76-023, July, 1976).

G This value is based on a 304(a) aquatic life criterion that was derived using the 1985 Guidelines (*Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses*, PB85-227049, January 1985) and was issued in one of the following criteria documents: Aluminum (EPA 440/5-86-008); Chloride (EPA 440/5-88-001); Chloropyrifos (EPA 440/5-86-005).

J This value is based on a 304(a) aquatic life criterion that was issued in the *1995 Updates: Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water* (EPA-820-B-96-001). This value was derived using the GLI Guidelines (60FR15393-15399, March 23, 1995; 40CFR132 Appendix A); the differences between the 1985 Guidelines and the GLI Guidelines are explained on page iv of the 1995 Updates. No decision concerning this criterion was affected by any considerations that are specific to the Great Lakes.

L There are three major reasons why the use of Water-Effect Ratios might be appropriate. (1) The value of 87 µg/l is based on a toxicity test with the striped bass in water with pH= 6.5-6.6 and hardness <10 mg/L. Data in "Aluminum Water-Effect Ratio for the 3M Plant Effluent Discharge, Middleway, West Virginia" (May 1994) indicate that aluminum is substantially less toxic at higher pH and hardness, but the effects of pH and hardness are not well quantified at this time. (2) In tests with the brook trout at low pH and hardness, effects increased with increasing concentrations of total aluminum even though the concentration of dissolved

aluminum was constant, indicating that total recoverable is a more appropriate measurement than dissolved, at least when particulate aluminum is primarily aluminum hydroxide particles. In surface waters, however, the total recoverable procedure might measure aluminum associated with clay particles, which might be less toxic than aluminum associated with aluminum hydroxide. (3) EPA is aware of field data indicating that many high quality waters in the U.S. contain more than 87 μg aluminum/L, when either total recoverable or dissolved is measured.

N This value was announced (62FR42554, August 7, 1997) as a proposed 304(a) aquatic life criterion. Although EPA has not responded to public comment, EPA has published this as a 304(a) criterion as guidance for States and Tribes to consider when adopting water quality criteria.

ADDITIONAL NOTES

3. Criteria Maximum Concentration and Criterion Continuous Concentration

The Criteria Maximum Concentration (CMC) is an estimate of the highest concentration of a material in surface water to which an aquatic community can be exposed briefly without resulting in an unacceptable effect. The Criterion Continuous Concentration (CCC) is an estimate of the highest concentration of a material in surface water to which an aquatic community can be exposed indefinitely without resulting in an unacceptable effect. The CMC and CCC are just two of the six parts of an aquatic life criterion; the other four parts are the acute averaging period, chronic averaging period, acute frequency of allowed exceedence, and chronic frequency of allowed exceedence. Because 304(a) aquatic life criteria are national guidance, they are intended to be protective of the vast majority of the aquatic communities in the United States.

4. Criteria Recommendations for Priority Pollutants, Non Priority Pollutants

This compilation lists all priority toxic pollutants and some non priority toxic pollutants, and both human health effect and aquatic organism effect criteria issued pursuant to CWA §304(a). Blank spaces indicate that EPA has no CWA §304(a) criteria recommendations. For a number of non-priority toxic pollutants not listed, CWA §304(a) "water + organism" human health criteria are not available, but EPA has published MCLs under the SDWA that may be used in establishing water quality standards to protect water supply designated uses. Because of variations in chemical nomenclature systems, this listing of toxic pollutants does not duplicate the listing in Appendix A of 40 CFR Part 423. Also listed are the Chemical Abstracts Service CAS registry numbers, which provide a unique identification for each chemical.

5. Water Quality Criteria published pursuant to Section 304(a) or Section 303(c) of the CWA

Many of the values in the compilation were published in the California Toxics Rule. Although such values were published pursuant to Section 303(c) of the CWA, they represent the EPA's most recent calculation of water quality criteria and are thus the Agency's 304(a) criteria.

6. Maximum Contaminant Levels and Organoleptic Effects

The compilation includes footnotes for pollutants with Maximum Contaminant Levels (MCLs) more stringent than the recommended water quality criteria in the compilation. MCLs for these pollutants are not included in the compilation, but can be found in the appropriate drinking water regulations (10-144 CMR Chapter 231, 40 CFR 141.11-16 and 40 CFR 141.60-63). In addition to toxic effects, some pollutants impart organoleptic effects (e.g., taste and odor) that may impair uses of the waters of the State by making water and edible aquatic life unpalatable but not toxic to humans. Pollutants with organoleptic effect criteria more stringent than the criteria based on toxicity (e.g., included in both the priority and non-priority pollutant tables) are

footnoted as such. For both MCL and organoleptic effects, the Department will consider all available information regarding such characteristics in regulating the discharge of pollutant to ensure the uses of the waters of the State are protected in all respects.

7. Specific Chemical Calculations

A. Selenium Aquatic Life

This compilation contains aquatic life criteria for selenium that are the same as those published in the proposed CTR. In the CTR, EPA proposed an acute criterion for selenium based on the criterion proposed for selenium in the Water Quality Guidance for the Great Lakes System (61 FR 58444). The GLI and CTR proposals take into account data showing that selenium's two prevalent oxidation states in water, selenite and selenate, present differing potentials for aquatic toxicity, as well as new data indicating that various forms of selenium are additive. The new approach produces a different selenium acute criterion concentration, or CMC, depending upon the relative proportions of selenite, selenate, and other forms of selenium that are present. EPA is currently undertaking a reassessment of selenium, and expects the 304(a) criteria for selenium will be revised based on the final reassessment (63FR26186). However, until such time as revised water quality criteria for selenium are published by the Agency, the recommended water quality criteria in this compilation are EPA's current 304(a) criteria.

B. Parameters for Calculating Freshwater Metals Criteria That Are Hardness-Dependent

Chemical	m_A	b_A	m_C	b_C
Cadmium	1.0166	-3.924	0.7409	-4.719
Chromium III	0.8190	3.7256	0.8190	0.6848
Copper	0.9422	-1.700	0.8545	-1.702
Lead	1.273	-1.460	1.273	-4.705
Nickel	0.8460	2.255	0.8460	0.0584
Silver	1.72	-6.59	--	--
Zinc	0.8473	0.884	0.8473	0.884

Hardness-dependant metals' criteria, as total metal, may be calculated from the following.

$CMC = \exp\{m_A [\ln(\text{hardness})] + b_A\}$

$CCC = \exp\{m_C [\ln(\text{hardness})] + b_C\}$

C. **Calculation of Freshwater Ammonia Criterion**

1. The one-hour average concentration of total ammonia nitrogen (in mg N/L) does not exceed, more than once every three years on the average, the CMC (acute criterion) calculated using the following equations.

   To support all species of fish:

$$CMC = \frac{0.275}{1 + 10^{7.204-pH}} + \frac{39.0}{1 + 10^{pH-7.204}}$$

2. The thirty-day average concentration of total ammonia nitrogen (in mg N/L) does not exceed, more than once every three years on the average, the CCC (chronic criterion) calculated using the following equation:

   (a) To support all life stages of fish:

$$CCC = \frac{0.0577}{1 + 10^{7.688-pH}} + \frac{2.487}{1 + 10^{pH-7.688}} \times \text{MIN}\,(2.85,\ 1.45 \times 10^{(0.028 \times (25-T))})$$

   (b) In addition, the highest four-day average within the 30-day period does not exceed 2.5 times the CCC.

Chapter 584: Surface Water Quality Criteria for Toxic Pollutants

SUMMARY: This rule establishes ambient water quality criteria for toxic pollutants in the surface waters of the State. The rule also sets forth procedures that may be used to determine alternative statewide criteria or site-specific criteria adopted as part of a licensing proceeding.

1. **Criteria and Applicability.** The ambient water quality criteria established by this rule are applicable to all surface waters of the State. These criteria are intended to prevent the occurrence of toxic pollutants in toxic amounts as prohibited by both the US Clean Water Act and State law and protect aquatic life and human health. Aquatic life criteria are intended to assure that toxic pollutants are not present in concentrations or amounts that would cause acute and or chronic adverse impacts on organisms in, on or using the surface waters. Human health criteria are intended to assure that toxic pollutants are not present in concentrations or amounts that would cause adverse impact to persons who eat organisms or drink water taken from the surface waters. In the case of marine waters the consumption of water will not be considered for application of human health criteria.

2. **Narrative Water Quality Criteria.** Except as naturally occurs, surface waters must be free of pollutants in concentrations which impart toxicity and cause those waters to be unsuitable for the existing and designated uses of the water body.

3. **Numerical Water Quality Criteria**

   A. **Statewide Criteria**

      (1) **Statewide Criteria for toxic pollutants with national water criteria.** Except as naturally occur, levels of toxic pollutants in surface waters must not exceed federal water quality criteria as established by USEPA, pursuant to Section 304(a) of the Clean Water Act, or alternative criteria established below.

      Statewide criteria are contained in Appendix A of this rule.

      (2) **Alternative Statewide Criteria.** Alternative statewide criteria must be adopted through rulemaking. Alternative statewide criteria must be based on sound scientific rationale and be as protective as EPA's water quality criteria. Such criteria must also be protective of the most sensitive designated and existing uses of the water body, including, but not limited to, habitat for fish and other aquatic life, human consumption of fish and drinking water supply after treatment. A proposal for alternative statewide criteria must be initiated in accordance with petition for rulemaking provisions of the State Administrative Procedures Act, 5 M.R.S.A., Section 8055, and include a thorough literature search of the properties of the toxicant, including but not limited to its toxicity, carcinogenicity, teratogenicity, mutagenicity, bioaccumulation/bioconcentration, and regulation by other states or foreign countries. Any such proposal must also take into consideration, at a minimum, the following:

         (a) **Aquatic Life Criteria.** Physical, chemical or biological conditions found in Maine waters that differ from the information used as the basis for national criteria from the USEPA. When toxicity testing is to be done, the procedures in 3(B)(1) will be used. Ambient data must be collected in general conformance with Chapter 530, section 4(D) and have sufficient geographic distribution to reflect variation of the

characteristics in question. Where discharges may affect the factors used to determine water quality criteria, significant sources representative of the pollutant, characteristics and geographic distribution will be evaluated as part of a proposal.

(b) **Human Health Criteria.** Changes to statewide criteria for the protection of human health must be supported by information following the general methods and considerations specified by USEPA in "Revisions to the Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (2000)," EPA-822-B-00-004, USEPA, Office of Science and Technology, Washington, D.C., 65 Federal Register No. 214, pp. 66443-66482, November 3, 2000. The Board shall consider this information and information provided by the Department of Human Services.

The Board may request additional materials and shall consider all relevant information when determining whether to adopt alternative statewide criteria.

(3) **Statewide criteria for toxic pollutants lacking national criteria.** The requirements of section 3(A)(2) also apply to the adoption of criteria for toxic pollutants not having water quality criteria established by USEPA, pursuant to Section 304(a) of the Clean Water Act.

B. Site-Specific Criteria. Site-specific numerical criteria for a toxic substance reflecting specific circumstances different from those used in, or not considered in the derivation of the statewide criteria, or for toxic pollutants lacking national criteria, must be adopted by the Board only as part of a waste discharge license proceeding, pursuant to 38 MRSA Sections 413, 414, and 414-A. Site-specific criteria must be based on sound scientific rationale, be as protective as federal water quality criteria and must be protective of the most sensitive designated and existing uses of the water body, including, but not limited to, habitat for fish and other aquatic life, human consumption of fish and drinking water supply after treatment.

Establishment of site-specific criteria must be initiated with a request that the Board assume jurisdiction for issuance of a license. Where the Department finds a request for site-specific criteria may affect other sources discharging to the same waterway, it may, pursuant to 38 MRSA, Section 414-A(5)(A), reopen for modification those licenses for consideration in the same proceeding. The information necessary to ensure that criteria are adequately evaluated must be submitted by a person requesting alternative criteria. The adequacy of this information shall be determined by the Board and may include, among other things, a literature search, user surveys and consumption rate calculations. A literature search of the properties of toxicants includes, but is not limited to, its toxicity, carcinogenicity, teratogenicity, mutagenicity, bioaccumulation/bioconcentration, and regulation by other states or foreign countries. Requests must provide information identifying specific uses of the water body in question, and any other relevant site-specific circumstance or information different from those used, or any not considered, in the derivation of the statewide criteria. Relevant information includes such things as sensitive or unique physical, chemical or biological conditions of the waterbody, rare or significant plant or wildlife communities and habitats located in the water body, or human populations having distinct uses or needs with regard to the water body.

Any request to the Board to establish site-specific criteria must also include, at a minimum, the following. A plan of study must be submitted to the Department for review and approval prior to the beginning of the studies, and may include the consideration of existing relevant scientific information as well as proposals for site-specific investigations.

(1) **Aquatic Life Criteria**

(a) Minimum requirements include toxicity tests conducted generally according to the USEPA Water Quality Standards Handbook: Second Edition, EPA-823-B-94-005-a, USEPA, Office of Water, Washington, DC, August, 1994, and applicable Water-effect Ratio Guidance or other guidance for development of site specific criteria approved by the Department.

(b) For complex effluents with more than one potentially toxic pollutant, both dilution waters (receiving water and laboratory water) must be spiked with all pollutants present in the effluent in significant amounts, except the pollutant of interest, or the whole effluent at levels representative of the calculated receiving water concentrations at the appropriate design flow. Pollutants present in significant amounts relative to toxic levels must be determined by means of periodic testing within two years of submitting the plan of study to the Department. The pollutant of interest must be added at various concentrations bracketing the target concentration (the existing or anticipated criterion) to determine an appropriate site-specific criterion. This procedure must be repeated for each pollutant for which site-specific criteria are to be proposed.

(c) For discharges to freshwater, the water flea (*Ceriodaphnia dubia*) reproductive and survival test, and the brook trout (*Salvelinus fontinalis*), or other salmonid approved by the Department, survival and growth tests must be conducted. For discharges to marine waters, Mysid shrimp (*Mysidopsis bahia*) survival test, and the sea urchin (*Arbacia punctulata*) fertilization test must be conducted.

(d) Results should be based on measured concentrations.

(e) For heavy metal tests, the metal must be added in the form of inorganic salts of relatively high solubility, such as nitrate salts or in some cases, chloride or sulfate salts.

(f) Sufficient testing must be conducted to properly characterize seasonal variations and the water quality criteria of concern. Receiving water and effluent sampling must be representative of expected conditions and exclude periods of floods, storm events and abnormal operation of the discharge source.

(2) **Human Health Criteria.** Persons requesting site specific criteria for the protection of human health must provide information following the general methods and considerations specified by USEPA in "Revisions to the Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (2000)," EPA-822-B-00-004, USEPA, Office of Science and Technology, Washington, D.C., 65 Federal Register No. 214, pp. 66443-66482, November 3, 2000. The Board shall consider this information and information provided by the Department of Human Services. In determining if site specific criteria are appropriate, the Board shall first evaluate whether

there is an identifiable population(s) using a water body whose use(s) is distinct from that of the population considered when establishing the statewide criteria. If the Board identifies such a population, it shall consider activities or customs that would constitute a use of the water body substantially different in type or extent than that upon which statewide criteria are based. The Board shall consider, among other things, the following:

(a) Studies designed and implemented to provide accurate information regarding the fact and extent of specific human activities that create a potential exposure to toxics in the water body, including such things as the rate of consumption of organisms, use of a water body as a drinking water supply, recreation in and on the water, and other specific uses of the water body established by local cultural or commercial practices;

(b) The importance of organisms affected by a toxic substance, taking into consideration their places in the food chain and the degree to which they are used or consumed by humans;

(c) Scientific evidence typically relied upon by experts in the field of toxicology showing the potential effect of a toxic substance in the discharge that is the subject of the licensing, on human health, given a particular established use of the water body; and

(d) Unique characteristics of the water body or organisms depending on it that effect exposure of humans to toxics in the water body.

4. **Risk levels.** For any pollutant believed to be carcinogenic, a risk level that would result, at most, in one additional cancer per one million people (risk of 1×10^{-6}) exposed to the carcinogen must be used in determining the human health criterion. Notwithstanding the above, the Department shall utilize a 10^{-4} risk level when calculating ambient water quality criteria for inorganic arsenic.

5. The following assumptions have been used to determine the statewide criteria contained in Appendix A of this rule.

A. Form of metals. All metals criteria must be considered as total metal.

NOTE: Persons may request that the Department express criteria for metals as the dissolved form by submitting the appropriate information to allow recalculation of relative toxicity using conversion factors and translator procedures published by EPA: "The Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion", EPA 823-B-96-007, USEPA, Office of Water, Washington, DC, June 1996.

B. Ambient water physical characteristics. Fresh water quality must be calculated using a pH of 7.0, a temperature of 25 degrees Celsius, and a hardness of 20 mg/L. Marine water quality must be calculated using a pH of 8.0, a temperature of 20 degrees Celsius, and a salinity of 30 parts per thousand. Estuarine water quality must be calculated using a pH of 8.0, a temperature of 20 degrees Celsius and a salinity of 20 parts per thousand.

NOTE: These characteristics, however, may vary depending on the location of the discharge. The relative criteria for a pollutant subject to these considerations may be recalculated in any given licensing proceeding using the actual local ambient physical water characteristics. See Chapter 530.

C. Human health assumptions. Human health criteria are determined assuming consumption of 2 Liters of water and 32.4 grams of organisms per day taken from surface waters of the State by a person weighing 70 kg. Notwithstanding the above, when calculating human health criteria for inorganic arsenic, the Department shall utilize a state-wide consumption value of 138 grams of organisms per day.

AUTHORITY:	38 MRSA Sections 341-H, 420, and 464(5)
EFFECTIVE DATE:	October 9, 2005 (filing 2005-402, 06-096 Chapter 530.5 repealed and replaced by this rule and Chapter 530)
EFFECTIVE DATE:	July 29, 2012 – filing 2012-211

Chapter 584. Appendix A. Statewide criteria for toxic pollutants with national water quality criteria for Priority Pollutants and non Priority Pollutants. Patterned after the EPA's National Recommended Water Quality Criteria of November 2002 and December 2003. "FR Cite/Source" refers to the EPA publication from which the criteria are derived. The "Gold Book" is Quality Criteria for Water: 1986. EPA 440/5-86-001.

1. Table I. Criteria for Priority Pollutant listed pursuant to 304(a) of the Clean Water Act. See also the footnotes following this table.

Priority Pollutant	CAS Number	Freshwater		Saltwater		Human Health For Consumption of:		FR Cite/ Source
		CMC (µg/L)	CCC (µg/L)	CMC (µg/L)	CCC (µg/L)	Water and Organisms (ug/L)	Organisms Only (ug/L)	
Antimony	7440360					5.5 B	350 B	65FR66443
Arsenic	7440382	340 A,K	150 A,K	69 A,bb	36 A,bb	1.3 M,S,aME	3.7 M,S,aME	65FR31682 57FR60848
Beryllium	7440417					Z		65FR31682
Cadmium	7440439	0.42 E,K,bb	0.08 E,K,bb	40 bb	8.85 bb	Z		65FR31682 EPA-822-R-01-001
Chromium III	16065831	483 E,K	23.1 E,K			Z Total		EPA820/B-96-001 65FR31682
Chromium VI	18540299	16 K	11 K	1,108 bb	50 bb	Z Total		65FR31682
Copper	7440508	3.07 E,K,cc	2.36 E,K,cc	5.78 cc,ff	3.73 cc,ff	1,300 U		65FR31682
Lead	7439921	10.52 E,bb,gg	0.41 E,bb,gg	221 bb	8.52 bb	Z		65FR31682
Mercury	7439976	See Title 38 MRSA, Sections 420 (1-B) and 413(11)						
Nickel	7440020	120.2 E,K	13.4 E,K	75 bb	8.28 bb	400 B	1,000 B	65FR31682

Priority Pollutant	CAS Number	Freshwater CMC (µg/L)	Freshwater CCC (µg/L)	Saltwater CMC (µg/L)	Saltwater CCC (µg/L)	Human Health For Consumption of: Water and Organisms (ug/L)	Human Health For Consumption of: Organisms Only (ug/L)	FR Cite/ Source
Selenium	7782492	L,R	5.0	291 bb,dd	71 bb,dd	162 Z	2,250	62FR42160 65FR31682 65FR66443
Silver	7740224	0.23 G, E		2.24 G				65FR31682
Thallium	7440280					0.17	0.25	68FR75507
Zinc	7440666	30.6 E,K	30.6 E,K	95 bb	86 bb	6,000 U	14,000 U	65FR31682 65FR66443
Cyanide	57125	22 K,Q	5.2 K,Q	1 Q,bb	1 Q,bb	140 jj	140 jj	68FR75507
Asbestos	1332214					$7x10^6$ fibers/L I		57FR60848
2,3,7,8-TCDD Dioxin	1746016	Also see Title 38 MRSA Section 420(2)				2.7E-9 J	2.8E-9 J	65FR66443
Acrolein	107028	3	3			3.9 ll	5.0 ll	74FR27535 74FR46587
Acrylonitrile	107131					0.04 B	0.13 B	65FR66443
Benzene	71432					0.58 B	7.55 B	IRIS 01/19/00 65FR66443
Bromoform	75252					4.2B	73 B	65FR66443
Carbon Tetrachloride	56235					0.23 B	0.89 B	65FR66443

Priority Pollutant	CAS Number	Freshwater CMC (µg/L)	Freshwater CCC (µg/L)	Saltwater CMC (µg/L)	Saltwater CCC (µg/L)	Human Health For Consumption of: Water and Organisms (ug/L)	Human Health For Consumption of: Organisms Only (ug/L)	FR Cite/ Source
Chlorobenzene	108907					120 B, U, Z	840 B,U	68FR75507
Chlorodibromomethane	124481					0.40 B	6.94 B	65FR66443
Chloroethane	75003							
2-Chloroethylvinyl Ether	110758							
Chloroform	67663					5.4 P	94 P	62FR42160
Dichlorobromomethane	75274					0.53 B	9.3 B	65FR66443
1,1-Dichloroethane	75343							
1,2-Dichloroethane	107062					0.38 B	19.8 B	65FR66443
1,1-Dichloroethylene	75354					320 Z	3,900	68FR75507
1,2-Dichloropropane	78875					0.50 B	7.9 B	65FR66443
1,3-Dichloropropene	542756					0.34	11.4 B	68FR75507
Ethylbenzene	100414					435	1,150	68FR75507
Methyl Bromide	74839					46 B	800 B	65FR66443
Methyl Chloride	74873							65FR31682
Methylene Chloride	75092					4.6 B	320 B	65FR66443

Priority Pollutant	CAS Number	Freshwater CMC (µg/L)	Freshwater CCC (µg/L)	Saltwater CMC (µg/L)	Saltwater CCC (µg/L)	Human Health For Consumption of: Water and Organisms (ug/L)	Human Health For Consumption of: Organisms Only (ug/L)	FR Cite/ Source
1,1,2,2-Tetrachloroethane	79345					0.16 B	2.2 B	65FR66443
Tetrachloroethylene	127184					0.59	1.77	65FR66443
Toluene	108883					1,200 Z	8,100	68FR75507
1,2-Trans-Dichloroethylene	156605					140 Z	5,500	68FR75507
1,1,1-Trichloroethane	71556					Z		65FR31682
1,1,2-Trichloroethane	79005					0.58 B	8.42 B	65FR66443
Trichloroethylene	79016					2.37	16.2	65FR66443
Vinyl Chloride	75014					0.025	1.32	68FR75507
2-Chlorophenol	95578					55.2 B,U	80.6 B,U	65FR66443
2,4-Dichlorophenol	120832					63.3 B,U	160 B,U	65FR66443
2,4-Dimethylphenol	105679					280 B	460 B,U	65FR66443
2-Methyl-4,6-Dinitrophenol	534521					12.5	155	65FR66443
2,4-Dinitrophenol	51285					68.4 B	2,900 B	65FR66443
2-Nitrophenol	88755							
4-Nitrophenol	100027							

Priority Pollutant	CAS Number	Freshwater CMC (µg/L)	Freshwater CCC (µg/L)	Saltwater CMC (µg/L)	Saltwater CCC (µg/L)	Human Health For Consumption of: Water and Organisms (ug/L)	Human Health For Consumption of: Organisms Only (ug/L)	FR Cite/ Source
3-Methyl-4-Chlorophenol	59507					U	U	
Pentachlorophenol	87865	8.72 F,K	6.69 F,K	13 bb	7.9 bb	0.25 B	1.64 B,H	65FR66443 65FR31682
Phenol	108952					10,514 B,U,ll	462,963 B,U,ll	74FR27535
2,4,6-Trichlorophenol	88062					0.93 B	1.31 B	65FR66443
Acenaphthene	83329					430 B,U	540 B,U	65FR66443
Acenaphthylene	208968							
Anthracene	120127					7,100 B	22,000 B	65FR66443
Benzidine	92875					0.00006 B	0.0001 B	65FR66443
Benzo(a)Anthracene	56553					0.003 B	0.01 B	65FR66443
Benzo(a)Pyrene	50328					0.003 B	0.01 B	65FR66443
Benzo(b)Fluoranthene	205992					0.003 B	0.01 B	65FR66443
Benzo(ghi)Perylene	191242							
Benzo(k)Fluoranthene	207089					0.003 B	0.01 B	65FR66443

Priority Pollutant	CAS Number	Freshwater CMC (µg/L)	Freshwater CCC (µg/L)	Saltwater CMC (µg/L)	Saltwater CCC (µg/L)	Human Health For Consumption of: Water and Organisms (ug/L)	Human Health For Consumption of: Organisms Only (ug/L)	FR Cite/ Source
Bis2-ChloroethoxyMethane	111911							
Bis2-ChloroethylEther	111444					0.029 B	0.28 B	65FR66443
Bis2-ChloroisopropylEther	108601					1,350 B	35,000 B	65FR66443
Bis2-EthylhexylPhthalate[X]	117817					0.8 B	1.19 B	65FR66443
4-BromophenylPhenylEther	101553							
Butylbenzyl Phthalate[W]	85687					900 B	1,050 B	65FR66443
2-Chloronaphthalene	91587					650 B	850 B	65FR66443
4-ChlorophenylPhenylEther	7005723							
Chrysene	218019					0.003 B	0.01 B	65FR66443
Dibenzo(a,h)Anthracene	53703					0.003 B	0.01 B	65FR66443
1,2-Dichlorobenzene	95501					330	700	68FR75507
1,3-Dichlorobenzene	541731					250	520	65FR31682
1,4-Dichlorobenzene	106467					50	105	68FR75507
3,3'-Dichlorobenzidine	91941					0.013 B	0.015 B	65FR66443

Priority Pollutant	CAS Number	Freshwater CMC (µg/L)	Freshwater CCC (µg/L)	Saltwater CMC (µg/L)	Saltwater CCC (µg/L)	Human Health For Consumption of: Water and Organisms (ug/L)	Human Health For Consumption of: Organisms Only (ug/L)	FR Cite/ Source
Diethyl Phthalate[W]	84662					13,000 B	24,000 B	65FR66443
Dimethyl Phthalate[W]	131113					221,000	600,000	65FR66443
Di-n-Butyl Phthalate[W]	84742					1,400 B	2,400 B	65FR66443
2,4-Dinitrotoluene	121142					0.11	1.83	65FR66443
2,6-Dinitrotoluene	606202							
Di-n-Octyl Phthalate	117840							
1,2-Diphenylhydrazine	122667					0.03 B	0.11 B	65FR66443
Fluoranthene	206440					71 B	75 B	65FR66443
Fluorene	86737					950 B	2,100 B	65FR66443
Hexachlorobenzene	118741					0.0002 B	0.0002 B	65FR66443
Hexachlorobutadiene	87683					0.43 B	9.96 B	65FR66443
Hexachlorocyclopentadiene	77474					39 U	600 U	68FR75507
Hexachloroethane	67721					1.04 B	1.78 B	65FR66443

Priority Pollutant	CAS Number	Freshwater		Saltwater		Human Health For Consumption of:		FR Cite/ Source
		CMC (µg/L)	CCC (µg/L)	CMC (µg/L)	CCC (µg/L)	Water and Organisms (ug/L)	Organisms Only (ug/L)	
Ideno(1,2,3-cd)Pyrene	193395					0.003 B	0.01 B	65FR66443
Isophorone	78591					35 B	520 B	65FR66443
Naphthalene	91203							
Nitrobenzene	98953					16.7 B	370 B,H	65FR66443
N-Nitrosodimethylamine	62759					0.00069 B	1.63 B	65FR66443
N-Nitrosodi-n-Propylamine	621647					0.005 B	0.27 B	65FR66443
N-Nitrosodiphenylamine	86306					2.23 B	3.24 B	65FR66443
Phenanthrene	85018							
Pyrene	129000					710 B	2,160 B	65FR66443
1,2,4-Trichlorobenzene	120821					25	38	68FR75507
Aldrin	309002	3.0 G		1.3 G		0.000027 B	0.000027 B	65FR31682 65FR66443
alpha-BHC	319846					0.0017 B	0.0026 B	65FR66443
beta-BHC	319857					0.006 B	0.009 B	65FR66443

Priority Pollutant	CAS Number	Freshwater		Saltwater		Human Health For Consumption of:		FR Cite/ Source
		CMC (µg/L)	CCC (µg/L)	CMC (µg/L)	CCC (µg/L)	Water and Organisms (ug/L)	Organisms Only (ug/L)	
gamma-BHC (Lindane)	58899	0.95 K		0.16 G		0.68 Z	0.1	68FR75507
delta-BHC	319868							
Chlordane	57749	2.4 G	0.0043 G,aa	0.09 G	0.004 G, aa	.00044	0.00044	65FR31682 65FR66443
4,4'-DDT	50293	1.1 G,ii	0.001 G,aa,ii	0.13 G,ii	0.001 G,aa,ii	0.00012 B	0.00012 B	65FR31682 65FR66443
4,4'-DDE	72559					0.00012 B	0.00012 B	65FR66443
4,4'-DDD	72548					0.00017 B	0.00017 B	65FR66443
Dieldrin	60571	0.24 K	0.056 K,O	0.71 G	0.0019 G,aa	0.000029 B	0.000029 B	65FR31682 65FR66443
alpha-Endosulfan	959988	0.22 G,Y	0.056 G,Y	0.034 G,Y	0.0087 G,Y	39 B	48 B	65FR31682 65FR66443
beta-Endosulfan	33213659	0.22 G,Y	0.056 G,Y	0.034 G,Y	0.0087 G,Y	39 B	48 B	65FR31682 65FR66443
Endosulfan Sulfate	1031078					39 B	48 B	65FR66443
Endrin	72208	0.086 K	0.036 K,O	0.037 G	0.0023 G,aa	0.032	0.032	68FR75507
Endrin Aldehyde	7421934					0.16 B	0.16 B,H	65FR66443

Priority Pollutant	CAS Number	Freshwater CMC (µg/L)	Freshwater CCC (µg/L)	Saltwater CMC (µg/L)	Saltwater CCC (µg/L)	Human Health For Consumption of: Water and Organisms (ug/L)	Human Health For Consumption of: Organisms Only (ug/L)	FR Cite/ Source
Heptachlor	76448	0.52 G	0.0038 G,aa	0.053 G	0.0036 G,aa	0.000043 B	0.000043 B	65FR31682 65FR66443
Heptachlor Epoxide	1024573	0.52 G,V	0.0038 G,V,aa	0.053 G,V	0.0036 G,V,aa	0.000021 B	0.000021 B	65FR31682 65FR66443
Polychlorinated Biphenyls PCBs:			0.014 N,aa		0.03 N,aa	0.000035 B,N	0.000035 B,N	65FR31682 65FR66443
Toxaphene	8001352	0.73	0.0002 aa	0.21	0.0002 aa	0.00015 B	0.000155 B	65FR31682 65FR66443

Footnotes to Table I:

A. This recommended water quality criterion was derived from data for arsenic (III), but is applied here to total arsenic, which might imply that arsenic (III) and arsenic (V) are equally toxic to aquatic life and that their toxicities are additive. In the arsenic criteria document (EPA 440/5-84-033, January 1985), Species Mean Acute Values are given for both arsenic (III) and arsenic (V) for five species and the ratios of the SMAVs for each species range from 0.6 to 1.7. Chronic values are available for both arsenic (III) and arsenic (V) for one species; for the fathead minnow, the chronic value for arsenic (V) is 0.29 times the chronic value for arsenic (III). No data are known to be available concerning whether the toxicities of the forms of arsenic to aquatic organisms are additive.

B. This criterion has been revised to reflect The Environmental Protection Agency's q1* or RfD, as contained in the Integrated Risk Information System (IRIS) as of May 17, 2002. The fish tissue bioconcentration factor (BCF)from the 1980 Ambient Water Quality Criteria document was retained in each case.

E. The freshwater criterion for this metal is expressed as a function of hardness (mg/L) in the water column. The value given here corresponds to a hardness of 20 mg/L. Also see part 7 below.

F. Freshwater aquatic life values for pentachlorophenol are expressed as a function of pH, and are calculated as follows: CMC = exp(1.005(pH)-4.869);CCC = exp(1.005(pH)-5.134). Values displayed in table correspond to a pH of 7.0.

G. This Criterion is based on 304(a) aquatic life criterion issued in 1980, and was issued in one of the following documents: Aldrin/Dieldrin (EPA 440/5-80-019), Chlordane (EPA 440/5-80-027), DDT (EPA 440/5-80-038), Endosulfan (EPA440/5-80-046), Endrin (EPA440/5-047), Heptachlor (440/580-052), Hexachlorocyclohexane (EPA440/5-80-054), Silver (EPA 440/5-80-071). The Minimum Data Requirements and derivation procedures were different in the 1980 Guidelines than in the 1985 Guidelines. For example, a "CMC" derived using the 1980 Guidelines was derived to be used as an instantaneous maximum. If assessment is to be done using an averaging period, the values given should be divided by 2 to obtain a value that is more comparable to a CMC derived using the 1985 Guidelines.

H. No criterion for protection of human health from consumption of aquatic organisms excluding water was present in the 1980 criteria document or in the *1986 Quality Criteria for Water*. Nevertheless, sufficient information was presented in the 1980 document to allow the calculation of a criterion, even though the results of such a calculation were not shown in the document.

I. This criterion for asbestos is the Maximum Contaminant Level (MCL) developed under the Safe Drinking Water Act.

J. These values are not applicable to bleach karft pulp mills. See 38 M.R.S.A., section 420(2)(I).

K. This recommended criterion is based on a 304(a) aquatic life criterion that was issued in the *1995 Updates: Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water*, (EPA-820-B-96-001, September 1996). This value was derived using the GLI Guidelines (60FR15393-15399, March 23, 1995; 40CFR132 Appendix A); the difference between the 1985 Guidelines and the GLI Guidelines are explained on page iv of the 1995 Updates. None of the decisions concerning the derivation of this criterion were affected by any considerations that are specific to the Great Lakes.

L. The CMC = 1/[(f1/CMC1) + (f2/CMC2)] where f1 and f2 are the fractions of total selenium that are treated as selenite and selenate, respectively, and CMC1 and CMC2 are 185.9 µg/l and 12.83 µg/l, respectively.

M. EPA is currently reassessing the criteria for arsenic.

N. This criterion applies to total PCBs (e.g. the sum of all congener or all isomer or homolog or Aroclor analyses).

O. The derivation of the CCC for this pollutant did not consider exposure through the diet, which is probably important for aquatic life occupying upper trophic levels.

P. Although a new RfD is available in IRIS, the surface water criteria will not be revised until the National Primary Drinking Water Regulations: Stage 2 Disinfectants and Disinfection Byproducts Rule (Stage 2 DBPR) is completed, since public comment on the relative source contribution (RSC) for chloroform is anticipated.

Q. This recommended water quality criterion is expressed as µg free cyanide (as CN)/L.

R. This value for Selenium was announced (61FR58444-58449, November 14, 1996) as a proposed GLI 303(c) aquatic life criterion. EPA is currently working on this criterion and so this value might change substantially in the near future.

S. This recommended water quality criterion refers to the inorganic form only.

U. The organoleptic effect criterion is more stringent than the value for priority toxic pollutants. Also see Part 6.

V. This value was derived from data for heptachlor and the criteria document provides insufficient data to estimate the relative toxicities of heptachlor and heptachlor epoxide.

W. Although EPA has not published a final criteria document for this compound, it is EPA's understanding that sufficient data exist to allow calculation of aquatic criteria. It is anticipated that industry intends to publish in the peer reviewed literature draft aquatic life criteria generated in accordance with EPA Guidelines. EPA will review such criteria for possible issuance as national WQC.

X. There is a full set of aquatic life toxicity data that show that BEHP is not toxic to aquatic organisms at or below its solubility limit.

Y. This value was derived from data for endosulfan and is most appropriately applied to the sum of alpha- endosulfan and beta-endosulfan.

Z. A more stringent MCL has been issued. Also see part 6 below.

aa This criterion is based on a 304(a) aquatic life criterion issued in 1980 or 1986, and in one of the following documents: Aldrin/Dieldrin (EPA 440/5-80-019), Chlordane (EPA 440/5-80-027), DDT (EPA 440/5-80-038), Endrin (EPA 440/5-80-047), Heptachlor (EPA 440/5-80-052), Polychlorinated Biphenyls (EPA 440/5-80-019), Toxaphene (EPA 440/5-86-038). The CCC is currently based on the Final Residual Value (FRV) procedure. Since the publication of the Great Lakes Aquatic Criteria Guidelines in 1995 (60FR15393-15399, March 23, 1995), the Agency no longer uses the FRV procedure for deriving CCCs for new or revised 304(a) aquatic life criteria. Therefore, the Agency anticipates that future revisions of this CCC will not be based on the FRV procedure.

bb This water quality criterion is based on a 304(a) aquatic life criterion that was derived using the 1985 Guidelines (*Guidelines for Deriving Numerical NationalWater Quality Criteria for the Protection of Aquatic Organisms and Their Uses*, PB85-227049, January 1985) and was issued in one of the following

criteria documents: Arsenic (EPA 440/5-84-033), Cadmium (EPA 440/5-84-032), Chromium (EPA 440/5-84-029), Copper (EPA 440/5-84-031), Cyanide (EPA 440/5-84-028), Lead (EPA 440/5-84-027), Nickel (EPA 440/5-86-004), Pentachlorophenol (EPA 440/5-86-009), Toxaphene, (EPA 440/5-86-006), Zinc (EPA 440/5-87- 003).

cc When the concentration of dissolved organic copper is elevated, copper is substantially less toxic and use of Water-Effects Ratios might be appropriate.

dd The selenium criteria document (EPA 440/5-87-006, September 1987) provides that if selenium is as toxic to saltwater fishes in the field as it is to freshwater fishes in the field, the status of the fish community should be monitored whenever the concentration of selenium exceeds 5.0 µg/L in salt water because the saltwater CCC does not take into account uptake via the food chain.

ff This recommended water quality criterion was derived in *Ambient Water Quality Criteria Saltwater Copper Addendum* (Draft, April 14, 1995) and was promulgated in the Interim final National Toxics Rule (60FR22228-222237, May 4, 1995).

gg EPA is actively working on this criterion and so this recommended water quality criterion may change substantially in the near future.

ii This criterion applies to DDT and it metabolites (i.e. the total concentration of DDT and its metabolites should not exceed this value).

jj. This criterion is expressed as total cyanide, even though the IRIS RfD used to derive the criterion is based on free cyanide. The multiple forms of cyanide that are present in ambient water have significant differences in toxicity due to their differing abilities to liberate the CN-moiety. Some complex cyanides require even more extreme condition the refluxing with sulfuric acid to liberate the CN-moiety. Thus these complex cyanides are expected to have little or no 'bioavailability' to humans. If a substantial fraction of the cyanide present in water body is present in a complex form (e.g. $Fe_4[Fe(CN)_6]_3$), this recommended criterion mat be over conservative.

ll. This criterion has been revised to reflect the Environmental Protection Agency's cancer slope factor (CSF) or reference dose (RfD), as contained in the Integrated Risk Information System (IRIS) as of (Final FR Notice June 10, 2009). The fish tissue bioconcentration factor (BCF) from the 1980 Ambient Water Quality Criteria document was retained in each case.

aME As noted in 06-096 CMR 584.4 and CMR 584.5.C, when calculating ambient water quality (human health) criteria for inorganic arsenic, a 10^{-4} risk level and a state-wide consumption value of 138 grams of organisms per day shall be utilized. Other values specific to inorganic arsenic shall include a bioconcentration factor of 26 L/kg, a cancer slope (potency) factor of 1.75 mg/kg/day, and an inorganic factor of 30%. The subject body weight of 70 kg and water consumption rate of 2 L/day remain consistent with human health criteria for other pollutants.

2. Table II. Criteria for Non-Priority Pollutants. See also the footnotes following this table.

Non Priority Pollutant	CAS Number	Freshwater		Saltwater		Human Health For Consumption of:		FR Cite/Source
		CMC (µg/L)	CCC (ug/L)	CMC (µg/L)	CCC (ug/L)	Water and Organisms (µg/L)	Organisms Only (ug/L)	
Aluminum pH 6.5 - 9.0	7429905	750 G	87 G,L					53FR33178
Ammonia	7664417	24,100 D	3,000 D	7,300 D	1,100 D			EPA822-R-99-014 EPA440-588-004
Barium	7440393					1,000 A		Gold Book
Boron		Narrative Statement – See document						Gold Book
Chloride	16887006	860,000 G	230,000 G					53FR19028
Chlorine	7782505	19	11	13	7.5	C		Gold Book
Chlorophenoxy Herbicide 2,4,5,-TP	93721					10 A		Gold Book
Chlorophenoxy Herbicide 2,4,D	94757					100 A,C		Gold Book
Chloropyrifos	2921882	0.083 G	0.041 G	0.011 G	0.0056 G			Gold Book
Demeton	8065483		0.1 F		0.1 F			Gold Book
Ether, Bis Chloromethyl	542881					0.000079 E	0.00016 E	65FR66443
Guthion	86500		0.01 F		0.01 F			Gold Book
Hexachlorocyclo-hexane-Technical	319868					0.0123	0.0414	EPA 440/5-80-054

Non Priority Pollutant	CAS Number	Freshwater		Saltwater		Human Health For Consumption of:		FR Cite/Source
		CMC (µg/L)	CCC (ug/L)	CMC (µg/L)	CCC (ug/L)	Water and Organisms (µg/L)	Organisms Only (ug/L)	
Iron	7439896		1000 F			300 A		Gold Book
Malathion	121755		0.1 F		0.1 F			Gold Book
Manganese	7439965					B	100 A	Gold Book
Methoxychlor	72435		0.03 F		0.03 F	100 A,C		Gold Book
Mirex	2385855		0.001 F		0.001 F			Gold Book
Nitrates	14797558					10,000 A		Gold Book
Nitrosamines						0.0008	1.24	Gold Book
Dinitrophenols	25550587					68	2,860	65FR66443
Nonylphenol	84852153	28	6.6	7	1.7			71FR9337
Nitrosodibutylamine,N	924163					0.0061 A	0.118 A	65FR66443
Nitrosodiethylamine,N	55185					0.0008 A	1.24 A	Gold Book
Nitrosopyrrolidine,N	930552					0.016	18.4	65FR66443
Diazanon	333415	0.17	0.17	0.82	0.82			71FR9336
Parathion	56382	0.065 J	0.013 J					Gold Book
Pentachlorobenzene	608935					0.79 E	0.81 E	65FR66443
Sulfide-Hydrogen Sulfide	7783064		2.0 F		2.0 F			Gold Book

Non Priority Pollutant	CAS Number	Freshwater		Saltwater		Human Health For Consumption of:		FR Cite/Source
		CMC (µg/L)	CCC (ug/L)	CMC (µg/L)	CCC (ug/L)	Water and Organisms (µg/L)	Organisms Only (ug/L)	
Tetrachlorobenzene,1,2,4,5-	95943					0.55 E	0.58 E	65FR66443
Tributyltin TBT		0.46 Q	0.072 Q	0.42 Q	0.0074 Q			69FR342
Trichlorophenol,2,4,5-	95954					1,300 B,E	2,000 B,E	65FR66443

Footnotes to Table II:

A This human health criterion is the same as originally published in the Red Book (EPA 440/9-76-023, July 1976) which predates the 1980 methodology and did not utilize the fish ingestion BCF approach. This same criterion value is now published in the Gold Book (Quality Criteria for Water: 1986. EPA 440/5-86-001).

B The organoleptic effect criterion is more stringent than the value presented in the non priority pollutant table.

C A more stringent Maximum Contaminant Level (MCL) has been issued by EPA under the Save Drinking Water Act. Refer to drinking water regulations 40CFR141 or Safe Drinking Water Hotline (1-800-426-4791) for values. Also see part 6 below.

D Aquatic life criteria are pH, temperature and/or salinity dependent. See part 7(C) for fresh water and reference document for marine waters. The values presented in the table are based on pH of 7.0 and temperature of 25°C in fresh waters; and pH of 8.0, temperature of 20°C and salinity of 30 parts per thousand in marine waters.

E This criterion has been revised to reflect The Environmental Protection Agency's q1* or RfD, as contained in the Integrated Risk Information System (IRIS) as of May 17, 2002. The fish tissue bioconcentration factor (BCF) used to derive the original criterion was retained in each case.

F The derivation of this value is presented in the Red Book (EPA 440/9-76-023, July, 1976).

G This value is based on a 304(a) aquatic life criterion that was derived using the 1985 Guidelines (*Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses*, PB85-227049, January 1985) and was issued in one of the following criteria documents: Aluminum (EPA 440/5-86-008); Chloride (EPA 440/5-88-001); Chloropyrifos (EPA 440/5-86-005).

J This value is based on a 304(a) aquatic life criterion that was issued in the *1995 Updates: Water Quality Criteria Documents for the Protection of Aquatic Life in Ambient Water* (EPA-820-B-96-001). This value was derived using the GLI Guidelines (60FR15393-15399, March 23, 1995; 40CFR132 Appendix A); the differences between the 1985 Guidelines and the GLI Guidelines are explained on page iv of the 1995 Updates. No decision concerning this criterion was affected by any considerations that are specific to the Great Lakes.

L There are three major reasons why the use of Water-Effect Ratios might be appropriate. (1) The value of 87 µg/l is based on a toxicity test with the striped bass in water with pH= 6.5-6.6 and hardness <10 mg/L. Data in "Aluminum Water-Effect Ratio for the 3M Plant Effluent Discharge, Middleway, West Virginia" (May 1994) indicate that aluminum is substantially less toxic at higher pH and hardness, but the effects of pH and hardness are not well quantified at this time. (2) In tests with the brook trout at low pH and hardness, effects increased with increasing concentrations of total aluminum even though the concentration of dissolved aluminum was constant, indicating that total recoverable is a more appropriate measurement than dissolved, at least when particulate aluminum is primarily

aluminum hydroxide particles. In surface waters, however, the total recoverable procedure might measure aluminum associated with clay particles, which might be less toxic than aluminum associated with aluminum hydroxide. (3) EPA is aware of field data indicating that many high quality waters in the U.S. contain more than 87 µg aluminum/L, when either total recoverable or dissolved is measured.

N This value was announced (62FR42554, August 7, 1997) as a proposed 304(a) aquatic life criterion. Although EPA has not responded to public comment, EPA has published this as a 304(a) criterion as guidance for States and Tribes to consider when adopting water quality criteria.

ADDITIONAL NOTES

3. Criteria Maximum Concentration and Criterion Continuous Concentration

The Criteria Maximum Concentration (CMC) is an estimate of the highest concentration of a material in surface water to which an aquatic community can be exposed briefly without resulting in an unacceptable effect. The Criterion Continuous Concentration (CCC) is an estimate of the highest concentration of a material in surface water to which an aquatic community can be exposed indefinitely without resulting in an unacceptable effect. The CMC and CCC are just two of the six parts of an aquatic life criterion; the other four parts are the acute averaging period, chronic averaging period, acute frequency of allowed exceedence, and chronic frequency of allowed exceedence. Because 304(a) aquatic life criteria are national guidance, they are intended to be protective of the vast majority of the aquatic communities in the United States.

4. Criteria Recommendations for Priority Pollutants, Non Priority Pollutants

This compilation lists all priority toxic pollutants and some non priority toxic pollutants, and both human health effect and aquatic organism effect criteria issued pursuant to CWA §304(a). Blank spaces indicate that EPA has no CWA §304(a) criteria recommendations. For a number of non-priority toxic pollutants not listed, CWA §304(a) "water + organism" human health criteria are not available, but EPA has published MCLs under the SDWA that may be used in establishing water quality standards to protect water supply designated uses. Because of variations in chemical nomenclature systems, this listing of toxic pollutants does not duplicate the listing in Appendix A of 40 CFR Part 423. Also listed are the Chemical Abstracts Service CAS registry numbers, which provide a unique identification for each chemical.

5. Water Quality Criteria published pursuant to Section 304(a) or Section 303(c) of the CWA

Many of the values in the compilation were published in the California Toxics Rule. Although such values were published pursuant to Section 303(c) of the CWA, they represent the EPA's most recent calculation of water quality criteria and are thus the Agency's 304(a) criteria.

6. Maximum Contaminant Levels and Organoleptic Effects

The compilation includes footnotes for pollutants with Maximum Contaminant Levels (MCLs) more stringent than the recommended water quality criteria in the compilation. MCLs for these pollutants are not included in the compilation, but can be found in the appropriate drinking water regulations (10-144 CMR Chapter 231, 40 CFR 141.11-16 and 40 CFR 141.60-63). In addition to toxic effects, some pollutants impart organoleptic effects (e.g., taste and odor) that may impair uses of the waters of the State by making water and edible aquatic life unpalatable but not toxic to humans. Pollutants with organoleptic effect criteria more stringent than the criteria based on toxicity (e.g., included in both the priority and non-priority pollutant tables) are

footnoted as such. For both MCL and organoleptic effects, the Department will consider all available information regarding such characteristics in regulating the discharge of pollutant to ensure the uses of the waters of the State are protected in all respects.

7. Specific Chemical Calculations

A. Selenium Aquatic Life

This compilation contains aquatic life criteria for selenium that are the same as those published in the proposed CTR. In the CTR, EPA proposed an acute criterion for selenium based on the criterion proposed for selenium in the Water Quality Guidance for the Great Lakes System (61 FR 58444). The GLI and CTR proposals take into account data showing that selenium's two prevalent oxidation states in water, selenite and selenate, present differing potentials for aquatic toxicity, as well as new data indicating that various forms of selenium are additive. The new approach produces a different selenium acute criterion concentration, or CMC, depending upon the relative proportions of selenite, selenate, and other forms of selenium that are present. EPA is currently undertaking a reassessment of selenium, and expects the 304(a) criteria for selenium will be revised based on the final reassessment (63FR26186). However, until such time as revised water quality criteria for selenium are published by the Agency, the recommended water quality criteria in this compilation are EPA's current 304(a) criteria.

B. Parameters for Calculating Freshwater Metals Criteria That Are Hardness-Dependent

Chemical	m_A	b_A	m_C	b_C
Cadmium	1.0166	-3.924	0.7409	-4.719
Chromium III	0.8190	3.7256	0.8190	0.6848
Copper	0.9422	-1.700	0.8545	-1.702
Lead	1.273	-1.460	1.273	-4.705
Nickel	0.8460	2.255	0.8460	0.0584
Silver	1.72	-6.59	--	--
Zinc	0.8473	0.884	0.8473	0.884

Hardness-dependant metals' criteria, as total metal, may be calculated from the following.

$CMC = \exp\{m_A [\ln(\text{hardness})] + b_A\}$

$CCC = \exp\{m_C [\ln(\text{hardness})] + b_C\}$

C. **Calculation of Freshwater Ammonia Criterion**

1. The one-hour average concentration of total ammonia nitrogen (in mg N/L) does not exceed, more than once every three years on the average, the CMC (acute criterion) calculated using the following equations.

   To support all species of fish:

$$CMC = \frac{0.275}{1 + 10^{7.204-pH}} + \frac{39.0}{1 + 10^{pH-7.204}}$$

2. The thirty-day average concentration of total ammonia nitrogen (in mg N/L) does not exceed, more than once every three years on the average, the CCC (chronic criterion) calculated using the following equation:

   (a) To support all life stages of fish:

$$CCC = \frac{0.0577}{1 + 10^{7.688-pH}} + \frac{2.487}{1 + 10^{pH-7.688}} \times \text{MIN}\left(2.85, 1.45 \times 10^{(0.028 \times (25-T))}\right)$$

   (b) In addition, the highest four-day average within the 30-day period does not exceed 2.5 times the CCC.

CHAPTER 584
Surface Water Quality Criteria for Toxic Pollutants

BASIS STATEMENT

Maine law 38 M.R.S.A, Section 420.2 requires the Board of Environmental Protection to regulate toxic substances in the surface waters of the State pursuant to state water quality criteria, consisting of levels set forth as federal water quality criteria pursuant to the Federal Clean Water Act or pursuant to adoption of alternative statewide or site-specific criteria found to be protective of the most sensitive designated use of the water body.

This rule revises an existing Maine rule (06-096 CMR 584, effective date October 9, 2005) with an original effective date of May 17, 1993. The original rule was established in response to amendments to the Federal Clean Water Act in 1987 and amendments to 38 MRSA, Section 420 enacted in 1991, both of which required Maine to develop comprehensive rules dealing with toxic pollutants in licensed wastewater discharges. The Department established and has managed a surface waters toxics control program since the effective date of the original rule.

This rule revision was initiated pursuant to P.L. 2011, c. 194 (LD 515), *An Act to Review State Water Quality Standards,* at the direction of the Joint Standing Committee on Environment and Natural Resources, and was further revised based on input received during a public comment period. This rule revision changes the cancer risk level, statewide fish consumption rate, bioconcentration factor, and establishes a percent inorganic factor for inorganic arsenic for use in calculating ambient water quality (human health) criteria. It also establishes revised inorganic arsenic criteria accordingly. Further, this revision updates Maine's ambient water quality and human health criteria for pollutants for which USEPA has updated criteria since Maine's last revision in 2005, using Maine-specific parameters where applicable. The Department anticipates that the revised rule will operate successfully within the Department's existing program.

Pursuant to Maine Law, 38 M.R.S.A., Section 341-H, the Department of Environmental Protection conducted a public hearing regarding this rule on November 1, 2011, in Augusta, Maine. The record for written comments remained open until 5:00 pm on December 1, 2011. The rule was reposted for further public comment on proposed changes to the proposed rule on March 14, 2012. The record for written comments remained open until 5:00 pm on April 13, 2012. Pursuant to 38 M.R.S.A., Section 341-H(3)(C), the Department of Environmental Protection provided notice of and, on June 19, 2012, conducted a public meeting for the purpose of receiving additional limited public comment on this rule.

LIST OF COMMENTERS PROVIDING COMMENTS AT THE NOVEMBER 1, 2011 PUBLIC HEARING AND DURING THE NOVEMBER 1, 2011 – DECEMBER 1, 2011 COMMENT PERIOD

Oral comments at the public hearing:

A: Cara O'Donnell, Houlton Band of Maliseet Indians
B: Bradley Moore, City of Bangor Wastewater Treatment Plant

Oral comments at the public hearing and provided written comments:

C: David Anderson, Maine Wastewater Control Association
D: Dennis Kearney, FMC Corporation, Rockland, ME
E: Dr. Rosalind Schoof for FMC Corporation and The Arsenic Legislation Coalition
F: Kenneth Gallant, Verso Paper Corporation
G: David Bolstridge, City of Rockland Pollution Control Facility
H: Nick Bennett for Natural Resources Council of Maine and Maine Rivers
I: Daniel Kusnierz, Penobscot Indian Nation

Written comments:

J: Brenda Commander, Houlton Band of Maliseet Indians
K: Ellen Ebert, Integral Consulting Inc.
L: Jay Beaudoin, Woodland Pulp LLC
M: Matthew Manahan Esq. for The Arsenic Legislation Coalition
N: Stephen Silva, US Environmental Protection Agency, Water Quality Branch

LIST OF COMMENTERS PROVIDING COMMENTS DURING THE MARCH 14, 2012 – APRIL 13, 2012 COMMENT PERIOD

O: Kirsten Hebert, Maine Rural Water Association
P: Dr. Rosalind Schoof for The Arsenic Legislation Coalition
Q: David Bolstridge, City of Rockland Pollution Control Facility

CHAPTER 584
Surface Water Quality Criteria for Toxic Pollutants

RESPONSE TO COMMENTS

This document notes and responds to all substantive comments offered on the initially proposed rule by members of the public at the November 1, 2011 public hearing and in writing during the initial public comment period of November 1, 2011 through December 1, 2011 (Section 1). Further, this document provides a response to comments received on proposed revisions to the proposed rule during the second public comment period of March 14, 2012 through April 13, 2012 (Section 2). The letter in parentheses at the end of the comment corresponds to the person providing the comment and, if applicable, the organization the person represents, as listed above. Where appropriate, similar comments have been combined. The Department has considered the full content of all the comments received in formulating its responses. The comments and responses are arranged by general subject matter of concern to commenters.

1. INITIAL PUBLIC COMMENT PERIOD NOVEMBER 1, 2011 – DECEMBER 1, 2011.

A. General Comments on the Rule

Commenters expressed both general opposition and general support of the proposed rule revisions. The Department is providing summaries of the comments in opposition and support, followed by the Department's responses below.

Changes in Human Health Criteria for Inorganic Arsenic

1. Comment: Opposed:

Several commenters oppose a change in the human health criteria for inorganic arsenic based on concerns with appropriate protections afforded by the criteria.

> The Houlton Band of Maliseet Indians (HBMI) states that a lack of recognition and protection for the fundamentally important cultural practice of fishing to provide food for a family and community threatens the health and welfare of our tribe. Rulemaking which weakens already inadequate standards harm us even further. The proposed arsenic criterion does not consider other exposure routes and possible synergistic effects, for example: drinking water well tests over the 10 ug/L drinking water standard, historical use of pesticides containing arsenic in Maine, a significantly greater percentage of smokers among the Maliseet population than the general population, unknown synergistic effects with mercury found in the Meduxnekeag and other rivers in Maine. (J)
>
> USEPA states that well sampling programs conducted in Maine in 1999/2000 and 2006/2007 indicate that a significant portion of Maine residents are already exposed to elevated arsenic due to high concentrations of arsenic in private drinking water wells. (N)

The Penobscot Indian Nation (PIN) states that the existing language in Chapter 584 provides a process for establishing alternative statewide or site specific criteria for arsenic and other pollutants. However, the rule language states that "*the alternative statewide criteria must be as protective as EPA's water quality criteria. Such criteria must also be protective of the most sensitive designated and existing uses of the water body, including, but not limited to habitat for fish and other aquatic life, human consumption of fish and drinking water supply after treatment.*" We contend that the most sensitive designated and existing uses of the Penobscot River include consumption of fish and other aquatic resources for sustenance purposes, a use that is not protected by the proposed change to the arsenic criteria. (I)

PIN further states that while meeting arsenic criteria may be a problem for some dischargers with arsenic source water issues, many dischargers do not have this problem. The changes to this rule seek to relax arsenic criteria state-wide. By using this blanket state-wide approach to address arsenic, MEDEP would be allowing for a relaxation of arsenic criteria in waters that are already meeting current criteria. This criteria relaxation goes against the premise of anti-backsliding and anti-degradation requirements that waters should be getting cleaner and not becoming more polluted. (I)

USEPA states that Maine's proposed arsenic human health criteria revision is based on a change to the cancer risk factor used in calculating the arsenic water quality criteria established to protect human health. Maine's current cancer risk factor for establishing arsenic criteria is one case per one million people (10E-6). The proposed cancer risk factor for establishing arsenic criteria is one case per ten thousand people (10E-4). The other terms used by Maine in calculating the water quality criteria for arsenic, including those used to estimate bioconcentration of arsenic in fish and the rate of fish consumption (FCR), remain unchanged. USEPA has been asked to address whether the proposed revised human health criteria for arsenic (calculated using a 32.4 grams/day statewide fish consumption rate) are sufficient to ensure that sensitive subpopulations will not be exposed to a cancer risk from arsenic exposure greater than one case per ten thousand people (10E-4). MEDEP's justification included the existing provision in 06-096 CMR 584 that allows the establishment of more stringent criteria upon a demonstration that they are appropriate. (N)

USEPA states that the rule revisions as proposed would not be adequately protective of sensitive subpopulations. Further details on USEPA's review and determination as well as the Department's response are included below.

Changes in Human Health Criteria for Inorganic Arsenic.
2. Comment: Support:

Several commenters support a change in the human health criteria for arsenic based on the expense involved in meeting the existing criteria-based limits and the belief that the existing limits are unnecessarily stringent.

The Maine Wastewater Control Association (MWWCA) states, in order to ensure that wastewater discharges are clean enough for the receiving water, each POTW (Publicly Owned Treatment Works) has a discharge permit issued by the DEP. A few years ago the water quality criteria for arsenic were revised so low that many POTWs could not meet the limits. Many of the discharge limits were below the reporting level of the arsenic method, meaning that they were being regulated on something you can't measure. Many industries found they could not meet the calculated arsenic limits for local industries through the pretreatment program that are based on a water quality criterion more than a thousand times lower than the drinking water limits. Removing arsenic to sub part per billion levels would require very expensive changes to our processes. If MEDEP can't adopt the rule as proposed, MWWCA urges a fuller examination of all the factors involved in calculating the water quality criteria, including the cancer slope factor, bioconcentration factor, and the organic/inorganic ratio. (C)

The FMC Rockland plant is the world's largest facility processing seaweed to extract various grades of carageenan, an important natural ingredient used in food, pharmaceutical and personal care products. Low levels of arsenic naturally occur in all seaweeds, just as it occurs in the soils, ground and surface waters in Maine, so that it is present in very small quantities in our discharge . The FMC Rockland plant has incurred numerous unanticipated operating costs which significantly affect our ability to compete with overseas producers. Costs related to new water filtration and new systems for solid waste management have added millions to our annual operating costs. If the current criteria continue, FMC would be faced with having to invest several million additional dollars in treatment technology. This is disturbing not just because there appears to be no clear scientific or health-based rationale for these criteria but also because of the severe competitive impacts it will have on FMC's Rockland operation. The current arsenic rule severely threatens the long-term viability of our Rockland plant and has no demonstrable benefit to human health or the environment. FMC urges the Department to revise the inorganic arsenic water quality criteria in a manner protective of public health and the environment, and consistent with that of many other states. (D)

The City of Rockland Pollution Control Facility treats wastewater from seafood and seaweed processors containing natural, mostly organic arsenic. If Rockland is unable to maintain compliance with its effluent limitations, these seafood and seaweed processors would be required to pretreat for arsenic at considerable expense, putting these businesses at an economic disadvantage with overseas competitors and other processors who do not have arsenic limits. Many states have much higher arsenic standards than proposed by Maine DEP. Many have adopted the 10 ug/L drinking water standard and six states utilize the old drinking water standard of 50 ug/L. Therefore, even with the change in criteria proposed, Maine would still have one of the more stringent arsenic AWQs in the nation. (G)

The City of Bangor Wastewater Treatment Plant has frustration and a concern with the current inorganic arsenic limit. There is a possibility that we could be moved through the industrial pretreatment program to regulate the water supply. When sound science supports an increase in allowable concentrations, we are in support of that change (risk factors). (B)

Verso Paper Corp. supports the revisions to Maine's Ambient Water Quality Criteria for inorganic arsenic as proposed in Chapter 584. Verso is particularly interested in the setting of new freshwater and saltwater criteria for arsenic based on a risk level of 10E-4 resulting in water quality criteria of 1.2 ppb (parts per billion) and 2.8 ppb respectively. The current 10E-6 risk factor results in freshwater quality criteria of 0.012 ppb. Arsenic is naturally occurring and is found in the bedrock of Maine. As a result, it occurs in Maine's surface and ground waters. Arsenic is also found in many of the raw materials utilized in the paper-making process such as wood fibers, clays and fillers. Dischargers have little or no control of the amount of arsenic in their effluent. There is little or no predictability in what any particular test result might be nor is there any practical treatment technology to employ to reduce this discharge of arsenic. If the Maine DEP does not revise the current Inorganic Arsenic Criteria, industrial and municipal facilities that have never been in noncompliance before will be found to be out of compliance with little or no effective means to meet compliance. (F)

The Woodland Pulp LLC Mill is currently facing a proposed arsenic limit of 0.35 ppb, an amount significantly below the Department's Reporting limit (RL) of 5 ppb. This limit, which is based on inorganic arsenic for which no approved method currently exists, would be suspended until USEPA approves a method for distinguishing between organic and inorganic arsenic. In other words, the mill would be forced to operate under and comply with theoretical limits that are uncertain. This level has been set in order to comply with the current risk levels for carcinogenic pollutants in Chapter 584, including arsenic. It is difficult and expensive to track arsenic at levels this far below the minimum detection limit. (L)

Woodland Pulp LLC further states, arsenic is generally ubiquitous in the environment, found in soil, wood, lime, water and other materials. Though the mill does not add arsenic in its processing functions, small amounts exist in the mill's wastewater stream. Unlike manufacturing facilities with effluent limits for pollutants that are added to the manufacturing process and thus can be controlled by the licensee, levels of mill arsenic discharges are largely governed by the amounts of arsenic found naturally in the raw materials we use, including the background levels of arsenic found in the St. Croix River, where the mill draws its process water. The proposed revision to Chapter 584 will address these concerns by setting a 10E-4 risk factor for inorganic arsenic that is protective of human health without imposing uncertain, expensive and unnecessary financial burdens on dischargers. It will achieve protecting the environment and protecting jobs and economic development by imposing limits on arsenic discharges at levels that can be supported by the science. (L)

Response to Comments #1 and #2

Valid comments have been received both in opposition and in support of the proposed changes to Maine's inorganic arsenic human health criteria. Maine's water quality laws and our ambient water quality criteria (AWQC) are designed to ensure protection of aquatic resources, aquatic life, and human health through attainment of water quality standards including site specific classification standards. Maine takes this responsibility very seriously. The revisions proposed to *Maine's Surface Water Quality for Toxic Pollutants* (06-096 CMR 584) were initiated pursuant to P.L. 2011, c.194, *An Act to Review State Water Quality Standards* (codified at 38 M.R.S.A., § 420(2)(J)), and at the direction of the Maine Legislature's Joint Standing Committee on Environment and Natural Resources. Consistent with P.L. 2011, c.194, the proposed revisions change the cancer risk level for inorganic arsenic used in calculating Ambient Water Quality Human Health Criteria and revise the inorganic arsenic criteria accordingly. This action was taken with the intent of implementing the revisions required by P.L. 2011, c.194, consistent with Maine's water quality laws and goals, in a manner approvable by USEPA. Additional revisions were proposed by the Department (MEDEP) to incorporate necessary changes in criteria for other pollutants since Maine's last rule revision in 2005.

Based on the comments received in the first public comment period and a review of methodologies used for establishing inorganic arsenic criteria in other states and USEPA regions, the Department proposed and sought comment on revised human health criteria. The revised AWQC (IA) were developed based on analysis and revisions of several of the factors used in calculating AWQC. This involves such factors as the bioconcentration factor, fish consumption rate, and percentage of inorganic arsenic, and is described in detail in Section 1.E of this document. The Department undertook this wider revision process in response to comments received, both in opposition and support to the initial proposed rule. Those comments that represent reoccurring themes, such as cultural practices, sustenance fishing, and cumulative effects, are addressed in greater detail in subsequent sections of this document.

The Department theorizes that the commenter's concerns with anti-backsliding and anti-degradation provisions of Maine law (38 M.R.S.A., Section 464.4.F) were likely related to a cancer risk level of 10E-4 and a statewide fish consumption rate of 32.4 g/day. The Department maintains that the revised criteria developed from a more complete review of underlying factors will better allow the Department to meet the requirements of Maine law (38 M.R.S.A., Section 464.4.F(1)): "*existing in-stream water uses and the level of water quality necessary to protect those existing uses must be maintained and protected.*"

AWQC and Drinking Water Standards (DWS) are often compared, but differences in the calculation methods and application of these standards should be noted. AWQC are established pursuant to the goals described above: protection of aquatic resources, aquatic life, and human health through attainment of water quality standards including site specific classification standards. The Human Health AWQC calculation uses pollutant-specific values for cancer risk level, cancer potency factor, subject body weight and water

consumption, bioconcentration factor, and fish consumption rate. Human Health AWQC for water and organisms considers two routes of exposure: drinking of water and eating of organisms. The acceptable cancer risk level specified in Maine rule has been 1 case per 1 million people (10E-6), however USEPA allows for rates between 10E-6 and 1 case per 10,000 people (10E-4) if sensitive subpopulations are protected to at least 10E-4. The Human Health AWQC are developed pursuant to the US Clean Water Act (CWA) regardless of cost or technical difficulty in achieving them. DWS are developed pursuant to the US Safe Drinking Water Act and utilize the anticipated cost of compliance using available treatment technology in the calculations, equating to cancer risk levels of 1 case per 1,000 people (10E-3). DWS consider one route of exposure: drinking of water. For some states, USEPA has approved use of the previous national DWS of 50 ug/L or current DWS of 10 ug/L as their AWQC (IA). However, USEPA indicates that this has only been done where it represents those states' most stringent criteria to date and that they are not considered necessarily protective of human health. Unfortunately, there is no consistency in the AWQC (IA) approved by USEPA across the country. Both the Human Health AWQC and DWS utilize an underlying factor of risk to the population, but their respective acceptable risks are different.

B. Section 4: *Risk levels.* and
Appendix A, Table 1: *Criteria for Priority Pollutant listed pursuant to 304(a) of the Clean Water Act* and *Footnotes to Table 1.*

Numerous commenters provided comments regarding the proposed change in the arsenic cancer risk factor from one case per one million (10E-6) to once case per ten thousand (10E-4) and in the resulting changes in arsenic human health criteria for consumption of water and organisms from 0.012 ug/L to 1.2 ug/L and in consumption of organisms only from 0.028 ug/L to 2.8 ug/L. As the former results in the latter, comments received both in opposition and support tended to combine these proposed changes. As there were no comments received regarding proposed changes to any other pollutant listed in Appendix A, Table 1, comments involving these two areas are included together.

Section 4: *Risk levels.*

Change in Cancer Risk Level for Inorganic Arsenic
3. Comment: Opposed:

Several commenters oppose the proposed change allowing the use of a (10E-4) risk level to calculate human health criteria for arsenic.

> NRCM and Maine Rivers state that arsenic is one of very few known human carcinogens. This proposal will potentially allow 100 times more arsenic into Maine's aquatic environment. (H)

The HBMI state that the initial changes proposed to Chapter 584 will increase cancer risk for our tribal membership. (J) These changes propose weakening the cancer risk level from one in one million to one in 10,000 which does not adequately protect general populations and, in particular, sensitive populations such as the Maliseets and other Maine tribes that practice sustenance fishing. (A) Combining a weakened cancer-risk level with an already inadequate fish consumption rate to establish an arsenic water quality criterion will not protect the subsistence lifeways that embody our culture and traditions. (J) Traditional uses have been modeled by Wabanaki Traditional Cultural Lifeways Exposure Pathway Scenario. The proposed rule changes do not take into consideration other arsenic exposure pathways from drinking and cooking with groundwater resources. The health issues that our tribal members face are increasing in part due to the lack of available clean resources like water and traditional foods. Tribal culture subsisted for thousands of years living on the food and water provided by the land and those are the resources that we need to protect for the health, safety and wellbeing of the next generations and for today. (A)

Several commenters observed that while USEPA's ambient water quality methodology does provide a range of cancer risk levels from ten to the minus four to ten to the minus six (I), criteria for carcinogens should not be set at a level that would result in a cancer risk level greater than 10E-4 for sensitive subpopulations. (Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (2000) EPA-822-B-00-004). (I)(J)(N)

The PIN states that under Maine DEP's proposal, tribal people carrying out sustenance fishing practices would be exposed to cancer risks that would exceed 10E-4. USEPA methodology indicates that a more protective risk level should be chosen. It is important for Maine DEP to understand that for populations of people that eat more fish than the general population, such as Penobscot tribal members with sustenance fishing rights, you are increasing their cancer risk beyond the 10E-4 level. (I)

USEPA states that while Maine's criteria are derived based on a nominal cancer risk factor of 10E-4, USEPA must consider afresh the appropriateness of the other terms Maine used (in concert with this new risk factor) to calculate the proposed arsenic criteria, in order to address Maine's question whether the proposed criteria in fact provide a 10E-4 level of protection to sensitive subpopulations. This is because Maine's new cancer risk factor eliminates a 100-fold factor of conservatism that previously existed when USEPA approved the now-current criteria. (N)

USEPA further states that MEDEP has indicated "*in the event that sensitive subpopulations and/or Maine itself wish to pursue establishing even more protective standards for specific waters, additional protection is provided in the existing rule (06-096 CMR 584), Section 3.B(2) through the ability for parties to request establishment of site specific human health criteria*". However, with the existing fish consumption rate of 32.4 grams/day and the proposed new cancer risk factor, USEPA does not agree that Maine's site-specific revision process can separately address USEPA's concerns. Such an approach would transform Maine's

initial burden (to establish that revised water quality criteria are sufficient to "protect the designated water uses," 40 CFR 131.5(a)(2)) into a public burden to submit data and other information to the State demonstrating that more stringent site-specific criteria are warranted. Furthermore, USEPA notes that under Chapter 584 such site-specific criteria could only be developed "as part of a waste discharge license proceeding." Focusing on site-specific criteria only in connection with a particular permit has the potential to deprive the State of opportunities to evaluate criteria in a more comprehensive way across a water body. The current structure also inevitably ties the deliberation of a site-specific criterion to the potential timing demands of a particular permit transaction, possibly depriving the State of the opportunity to consider fully the broader issues raised when evaluating whether to adopt a new criterion. (N)

USEPA states that Maine has not demonstrated that its initial proposal to revise statewide arsenic criteria will be protective of sensitive subpopulations to no greater than a 10E-4 cancer risk level. In deriving the proposed criteria, Maine failed to consider adequately the exposure to arsenic of subsistence fishers that are members of the Maine Indian Tribes, the Penobscot nation and Passamaquoddy Tribe in particular. (N)

Several commenters state that new scientific evidence indicates that arsenic is a more potent carcinogen than was previously understood (H)(N). USEPA states that current national recommended water quality criteria and the current USEPA IRIS cancer slope factor (as of November 2011) are based on studies which indicated risk of skin cancer due to exposure to arsenic. Newer studies, however, indicate that arsenic exposure also results in internal cancers such as bladder and lung cancer. The National Research Council and the USEPA Science Advisory Board provided advice on the assessment of risks of inorganic arsenic recommending that the risk of arsenic induced internal cancers be included in evaluating the health effects of arsenic, but it has not yet been finalized by the Agency. (N) NRCM and Maine Rivers state, as a result, USEPA is currently considering increasing the arsenic cancer slope factor up to 25 times. Thus, it makes no sense at a time when USEPA is recognizing an increased threat from arsenic that MEDEP is proposing to allow substantially more of it into our aquatic environment. (H)

NRCM and Maine Rivers further state, USEPA's pretreatment process is supposed to necessitate POTW operators to check their inputs for toxic contaminants and then require that the contaminants be dealt with if they are detected. Further, Chapter 530 allows the flexibility to set site specific criteria for individual dischargers with high arsenic inputs from a drinking water utility in their system through a Use Attainability Analysis (UAA). We do not believe it is acceptable to simply relax standards so that POTWs do not need to perform their pretreatment function or that it is necessary to do so for the entire state so that the minority of facilities that have arsenic problems do not have to perform a UAA or petition for a site specific criterion. (H)

USEPA recommends that Maine DEP proposes statewide arsenic criteria that MEDEP can demonstrate are protective of the general population as well as the sensitive subpopulations in Maine, notably the Maine Indian Tribes' subsistence fishers. Such criteria should be derived from scientifically sound values for the different variables that comprise the calculation of the criteria including, but not limited to, a supportable FCR. (N)

Section 4: *Risk levels.*

Change in Cancer Risk Level for Inorganic Arsenic
4. Comment: Support:

Other commenters expressed support for the proposed revision to the cancer risk level.

FMC Corporation and the Arsenic Legislation Coalition (ALC) state that inorganic arsenic is naturally present throughout our environment. In areas of the world where very high concentrations of arsenic are found in drinking water, arsenic has been shown to cause increases in some cancers; however, while USEPA regulates arsenic as though risks are present at low levels, no increased risk has been observed for the normal range of arsenic in food and water in the United States. Maine's current AWQC (IA) of 0.012 ug/L for water plus organisms (e.g., fish) and 0.028 ug/L for organisms only are even lower (more stringent) than the USEPA AWQC (IA). The USEPA methodology for deriving Human Health AWQC allows AWQC to be based on theoretical incremental risks ranging from 10E-6 or, one in a million, to 10E-4, or one in 10,000. These are only theoretical risks, not actual risks. The proposed change in the theoretical risk level for the arsenic AWQC is unlikely to result in any increase in actual health risks to any Maine resident. The primary reason is that the natural arsenic concentrations in surface waters are similar to the concentrations of the proposed AWQC (IA) with a median As concentration in US rivers of 1 ug/L and a 75th percentile of 3 ug/L. Consequently, the proposed arsenic AWQC of 1.2 ug/L for water and organisms will have little or no likelihood of increasing natural water concentrations in rivers. The proposed AWQC (IA) of 2.8 ug/L for organisms only will be applied primarily to non-potable waters such as estuarine and marine waters. Arsenic concentrations in coastal waters and estuaries are higher on average than concentrations in freshwater, and are generally in the range of 1-3 ug/L, so the AWQC (IA) for organisms only will not change arsenic concentrations in estuaries and coastal waters. There is no human health benefit of setting AWQC (IA) to levels below the proposed criteria because naturally-occurring background levels are in this range. As long as natural levels do not change, people will not have increased exposure to arsenic and, therefore, will not have increased risk. (E)

FMC Corporation and the ALC further state, the proposed Chapter 584 inorganic arsenic criteria are protective of human health and are more stringent than criteria approved by most other states. The criteria are also consistent with USEPA methodologies and guidelines for developing human health criteria and, as long as

there are no increases above natural levels, will not lead to increased exposure to arsenic for Maine residents. Even huge fish consumers will be protected because the arsenic concentrations in fish will not change. Despite the nominal increase of the theoretical cancer risk level to 10E-4, the actual incremental risk will be far lower, and most likely will be negligible. (E)

Verso Paper Corporation states that an inorganic arsenic WQC risk factor 10E-4 is based on sound science and remains protective of the environment while allowing dischargers who in reality have no control over the discharge of arsenic to remain in compliance. Current levels of arsenic found in many of Maine's public and private drinking water supplies exceed even the new ambient water quality limits proposed in Chapter 584 based on the 10E-4 risk factor and a resulting water quality criteria of 1.2 ppb. Put simply, the proposed water quality criteria in Chapter 584 are still far more stringent than Maine's drinking water standards for the protection of human health. Passing Ch 584 as proposed will not result in an increase in arsenic discharged and it will not have a negative impact on the environment. The science shows that the new inorganic arsenic criteria will be protective of aquatic and human life and will not needlessly put many industrial and municipal dischargers in an out-of-compliance situation with little or no means of control. (F)

Response to Comments #3 and #4

USEPA's Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health (2000)(EPA-822-B-00-004), (USEPA's AWQC Methodology) Section 2.4 indicates, "*EPA believes that both 10*(e-6) *and 10*(e-5) *may be acceptable for the general population and that highly exposed populations should not exceed a 10*(e-4) *risk level.*" "*EPA understands that fish consumption rates vary considerably, especially among subsistence populations, and it is such great variation among these population groups that may make either 10*(e-6) *or 10*(e-5) *protective of those groups at a 10*(e-4) *risk level.*" "*Such determinations should be made by the State or Tribal authorities and are subject to EPA's review and approval or disapproval under Section 303(c) of the CWA.*" to ensure that the criteria are "*adequately protective of the most highly exposed subpopulation.*" USEPA allows for rates between 10E-6 and 10E-4 if sensitive subpopulations are adequately protected. The revision in cancer risk level from 10E-6 to 10E-4 is in response to P.L. 2011, c.194, *An Act to Review State Water Quality Standards* (codified at 38 M.R.S.A. § 420(2)(J)). It is Maine's intention that AWQC (IA) be protective of all consumers, including highly exposed populations. As noted above, based on comments received on the initial proposed rule, the Department proposed revised human health criteria based on revisions to several of the factors used in calculating AWQC. The Department has reviewed each of the appropriate factors involved and provides details on the revised criteria at Section 1.E of this document.

The Department theorizes that USEPA's concerns with Maine's process for establishing site-specific human health criteria were likely greater when considering a cancer risk level of 10E-4 and a statewide fish consumption rate of 32.4 g/day, and that these concerns are likely lessened with the revised criteria. Even with revised criteria developed from a more complete review of underlying factors, the Department maintains that in the event that

sensitive subpopulations and/or Maine itself wish to pursue establishing even more protective standards for specific waters, additional protection is provided in the existing rule (06-096 CMR 584), Section 3.B through the ability to request establishment of site specific criteria. If the Board of Environmental Protection determines "*there is an identifiable population(s) using a water body whose use(s) is distinct from that of the population considered when establishing the statewide criteria*" "*it shall consider activities or customs that would constitute a use of the water body substantially different in type or extent than that upon which statewide criteria are based.*" Section 3.B(2). Concerns have been expressed regarding the requirement that site specific criteria must be adopted as part of a waste discharge license proceeding. However, "*where the Department finds a request for site-specific criteria may affect other sources discharging to the same waterway, it may, pursuant to 38 MRSA, Section 414-A(5)(A), reopen for modification those licenses for consideration in the same proceeding.*" Section 3.B. As noted in the Response to Comments for the 2005 revisions on Chapter 584 on this very topic, "*this will allow one presentation of the facts, participation by all parties, and consistent licenses*", thus ensuring an appropriate approach to this issue.

Appendix A, Table 1: *Criteria for Priority Pollutant listed pursuant to 304(a) of the Clean Water Act* and *Footnotes to Table 1.*

Fish Consumption / Sustenance Rights
5. Comment: Opposed:

Numerous commenters provided comments regarding the appropriateness of the fish consumption rate used by the Department, the study from which data was obtained (ChemRisk (1992), Ebert et al (1993)), and the issue of sustenance rights for Native Americans.

The following comments were provided by the PIN and the HBMI:

> To use a 10E-4 risk level for calculating the AWQC for inorganic arsenic and the 32.4 gram per day fish consumption rate used by Maine DEP for the arsenic criteria would result in an ambient water quality and human health criteria for inorganic arsenic criteria of 1.2 ug/L, which would not adequately protect the health of Penobscot tribal members. The Penobscot Nation has legally protected sustenance fishing rights within their reservation waters which would be affected by this rule. The changes to this rule would prevent tribal members from being able to fully exercise these sustenance rights and would put our people's health at risk. (I) The "Wabanaki Traditional Cultural Lifeways Exposure Pathway Scenario" reflects a Wabanaki subsistence exposure pathway via fish consumption as 286 - 514 grams per day, a far cry from the state's fish consumption rate of 32.4 grams per day (I)(J).

Maine DEP commonly refers to consumption rates from the 1992 ChemRisk study as evidence that the 32.4 grams per day rate it uses is protective of Maine tribes. However, we believe the study is flawed and does not accurately reflect consumption rates of Penobscot or other tribal people. (I)(J) Clearly Penobscot people would be exposed to much higher and unacceptable risk levels when consuming fish at sustenance levels. (I) The ChemRisk study was initiated after fish consumption guidelines were already in place, thus potentially characterizing fish consumption that is inhibited or suppressed by toxic exposure concerns (I)(J) when people were being warned against eating fish from Maine rivers, including the Penobscot. The surveys for the study were done in 1990. Maine Bureau of Health and ME DEP first issued consumption advisories in 1987 for the Penobscot, and then issued more restrictive advisories in 1990. (I)

The sample size of 43 Native Americans anglers is too low to make any statistically valid conclusions regarding fish consumption in this population. (J) Because the ChemRisk study only surveyed people that held a 1989 Maine resident fishing license it likely did not sample Penobscot sustenance fisherman (I) or Maliseet tribal members who obtain their licenses from tribal governments (J). Penobscot tribal members get sustenance fishing licenses directly from the tribe and are not required to get Maine recreational licenses to fish in tribal waters, including the Penobscot River. Likewise, it is our experience that tribal people who carry out subsistence lifestyles are not likely to be "captured" in mail or telephone surveys. We believe that the consumption rates from the Wabanaki Exposure Scenario Study more accurately reflect sustenance fishing practices and demonstrate the inadequate protection offered by the proposed rule changes. (I)

USEPA provided the following comments:

USEPA believes that Maine's reliance solely on the ChemRisk survey of recreational anglers in Maine in the 1989-1990 fishing season is not justified in determining an adequate level of protection for the Maine Indian Tribes. First, the ChemRisk study involved a survey of recreational anglers only, and did not consider fish consumption by persons who take fish for their individual sustenance, e.g. members of the Maine Indian Tribes. The ChemRisk study was based on a survey of anglers who were required to obtain recreational fishing licenses from the State of Maine. However, the Maine Indian Tribes have asserted to USEPA during consultation that members of the Penobscot Nation and the Passamaquoddy Tribe are not required to obtain such licenses under state law. By definition, therefore, members of the Penobscot Nation and the Passamaquoddy Tribe were not included in the population surveyed. MEDEP has indicated to USEPA that some "anglers of Native American heritage" who fish for recreational purposes and who are required to obtain a fishing license from the State were surveyed by ChemRisk; however, that fact does not address or cure USEPA's concerns because there is no indication the survey assessed subsistence tribal consumers. Thus, USEPA concludes that Maine is not in possession of adequate local or specific data that would support use of a FCR of 32.4 grams/day, in combination with a cancer risk factor of 10E-4, as part of the determination of an adequate level of protection for the Maine Indian Tribes' subsistence fishing use. (N)

USEPA notes that the Maine Implementing Act, as ratified by the federal Maine Indian Claims Settlement Act, specifically recognizes the reserved right of the Penobscot Nation and Passamaquoddy Tribe to take fish within the boundaries of their Indian reservations for their individual sustenance. There may also be other tribal uses that merit specific examination or further documentation to determine whether there is an identifiable population that is making a use of waters distinct from that of the general population. For example, the Tribes and other subpopulations may engage in fishing for the sustenance in waters outside the boundaries of the tribal reservations. (N)

For use in these revised criteria, EPA does not believe that Maine has adequately demonstrated that a statewide FCR of 32.4 grams/day accurately reflects the Maine Indian Tribes' rate of fish consumption. In particular, EPA does not believe that Maine has adequately demonstrated how this FCR would protect the Maine Indian Tribes' unique uses of the waters in the State, especially the right of the Penobscot Nation and the Passamaquoddy Tribe to take fish for their individual sustenance. (N)

Appendix A, Table 1: *Criteria for Priority Pollutant listed pursuant to 304(a) of the Clean Water Act* and *Footnotes to Table 1.*

Fish Consumption / Sustenance Rights
6. Comment: Support:

The following comments were provided by the principal author of the ChemRisk (1992) and Ebert et al (1993) reports.

The 32.4 g/day fish consumption rate that forms the basis for Maine's current WQC is based on the assumption that one-half pound (227 g) of recreationally caught fish obtained from Maine waters may be consumed weekly throughout the year. The ChemRisk and HBRS (1992) findings are directly relevant to the selection of an appropriate fish consumption rate for rulemaking. The USEPA has established a methodology for states and tribes to develop ambient water quality criteria (USEPA 2000). This methodology recommends the following hierarchy for selecting fish consumption rates (FCRs) to be used in the following order of preference: 1. site-specific FCR that represents at least the central tendency of the population surveyed (either sport or subsistence or both); 2. reports from existing fish intake surveys that reflect similar geography and population groups (i.e. from neighboring State or Tribe or a similar watershed type); 3. use intake rate assumptions from national food consumption surveys; 4. USEPA's defaults of 17.5 g/day for the general adult population and sport fishers, and 142.4 g/day for subsistence fishers. (K)

USEPA (2000) uses the default rate of 17.5 g/day in its national 304(a) criteria derivations. It has been chosen to be protective of the majority of the general population. In addition, USEPA states that it "*has provided default values for States and authorized Tribes that do not have adequate information on local or regional consumption patterns, based on numerous studies that EPA has reviewed*

on sport anglers and subsistence fishers." While USEPA's methodology allows substantial flexibility in the development of state-specific or waterbody-specific WQC, it is clear that protection of every potentially exposed individual is not its goal. Instead, the methodology strives to protect average consumption among all potentially exposed populations, including higher consuming subpopulations. (K)

USEPA's preferred methodology for selecting fish consumption rates is the use of State-specific data where available. Such data are available in Maine for the general angler population and also for various, potentially sensitive ethnic subpopulations in the state. A one-year state-wide survey of licensed Maine recreational anglers was conducted in 1991 (ChemRisk 1992; Ebert et al, 1993). Those survey data indicated that 95 percent of the Maine anglers surveyed who consumed sport-caught fish obtained through both open-water and ice-fishing in Maine, consumed a total of 26 g/day or less. At the time the survey was conducted, there were fish consumption advisories present on only 200 miles of the more than 37,000 miles of rivers, streams and brooks in the state, and there were no advisories present on any of Maine's roughly 2,500 lakes and ponds. As a result, Maine anglers had the ability to fish from a nearly unlimited number of non-advisory Maine waterbodies during that time period. (K)

Fish consumption rates for a number of identified subpopulations were also estimated based on those survey data. The group with the highest consumption rates was those individuals who identified themselves as Native Americans. A total of 148 Native Americans were included in the surveyed population (11 percent of the population who participated) and 96 of those individuals reported consuming freshwater fish that had been sport-caught. While the median consumption rate (50^{th} percentile) of 2.3 g/day for this subpopulation was similar to other groups evaluated, the arithmetic mean of 10 g/day was higher than the average of 6.4 g/day for the total population, and the 95^{th} percentile of 51 g/day (since corrected to 60 g/day based on a revision of sample size) was nearly double the 95^{th} percentile for the total angler population (ChemRisk and HBRS 1992). These data indicated that there was a portion of the Native American population that, on average, was consuming fish at higher rates than the general angler population. However, only six percent of the 96 Native Americans who consumed fish consumed at rates higher than the 32.4 g/day upon which the current WQC is based. In addition, the maximum rate reported by this subpopulation (162 g/day) was lower than the maximum consumption rate of 182 g/day reported for the entire population surveyed. Thus, while the average Native American angler consumed more than the average recreational angler, the consumption rates for the very highest consumers were similar to those for the population at large. (K)

Questions regarding potential fish consumption of Native American tribal members have arisen, in part, from the reported results of a dietary reconstruction study conducted by Harper and Ranco (2009). These authors estimated historical consumption rates between 286 and 514 g/day for Maine's Native American tribes based on assumptions about caloric intake and literature-based information about

the historical dietary practices of Native Americans in the 16th, 17th, 18th, and 19th centuries. The stated intent of that report was to reflect the historical patterns of individuals fully using their natural resources, and the report asserted that individuals could not return to these patterns because of present-day environmental contamination conditions but that they would return to this behavior "once protective standards are in place." This report implies that impaired water quality is the reason that individuals do not currently consume fish at the historically higher rates, and that a substantial number of them would return to those historically higher consumption rates if water quality was improved. However, neither assertion is likely to be true. (K)

All individuals who lived in Maine in the 16th, 17th, 18th and 19th centuries lived in a subsistence manner. Thus, this behavior was not limited to the tribes. Hunting, fishing, farming and trading were the only way that individuals could feed themselves as there were no widely available commercial foods. Due to the current commercial availability of fresh, frozen and prepared foods in stores and restaurants, and public assistance for low income persons, this lifestyle is no longer necessary for survival in Maine. (K)

At the time that the Maine angler survey was conducted, advisories were limited to specific main stem reaches of four warmwater rivers in the State but there were no advisories on any other waterbodies. Thus, Maine anglers had a vast number and variety of non-advisory fishing resources available at that time. Despite this, only 65 percent of the licensed Native Americans who participated in the survey actually consumed sport-caught fish. This percentage was lower than the 77 percent of the total angler population surveyed that consumed sport-caught fish. Thus, even when nearly unlimited resources were available, none of the Native Americans included in the survey consumed at the levels asserted by the Harper and Ranco study. (K)

All of the available data indicate that it is highly unlikely that a substantial number of Native Americans in Maine would return to historical subsistence behaviors that occurred prior to the 20th century even if Maine waterbodies were returned to a pristine condition. This is largely due to the commercial availability of a wide variety of market-based foods. In fact, when nearly all of Maine's water bodies were viewed as pristine, due to the lack of advisories at the time the Maine angler survey was conducted, this type of behavior was not exhibited. It is recommended that the current fish ingestion rate of 32.4 g/day be retained as the basis for the WQC for arsenic. This rate is protective of more than 95 percent of the total angler population in Maine and is protective of 94% of the Native American angler population in the state. It is based on state-specific data, as outlined in the first tier of USEPA's (2000) hierarchy, and it exceeds the rate of 17.5 g/day that USEPA uses to develop its national water quality criteria. (K)

The following comments were provided by the ALC.

As a legal clarification, Native Americans in Maine do not have sustenance fishing rights outside the tribal reservations, and the geographic scope of the tribal reservations is limited under the terms of the Act to Implement the Maine Indian Claims Settlement (the "Implementing Act"), 30 MRSA, Sections 6201-6214. The Implementing Act gives the members of the Penobscot nation and the Passamaquoddy Tribe sustenance fishing rights "within the boundaries of their respective Indian Reservations." Outside those tribes' reservations they are subject to the same fishing restrictions as any other citizens of the State, including season and bag limits. Further, the Houlton Band of Maliseet Indians (HBMI) does not have sustenance fishing rights at all. Outside of the Penobscot Nation and Passamaquoddy Tribe reservations, no one has a right of sustenance or subsistence fishing. (M)

The Penobscot Nation Reservation is defined in the Implementing Act as Indian Island and all islands in the Penobscot River north of Indian Island that existed on June 29, 1818, excepting any island transferred to anyone outside the Penobscot nation subsequent to June 29, 1818 and before 1980. Those islands do not include any portion of the Penobscot River (reference 6/3/97 letter from Maine Office of Attorney General to USEPA Region 1). Nor does the Penobscot River include islands in the branches of the Penobscot River (reference 12/16/93 letter from Maine Office of Attorney General to Bureau of Indian Affairs). (M)

Principles of riparian ownership do not apply to extend the Penobscot Nation Reservation to the middle of the Penobscot River because the Penobscot Nation does not "own" the Penobscot Nation Reservation. Rather, the State of Maine owns the Penobscot Nation Reservation in trust for the Penobscot Nation. The scope of the Penobscot Nation Reservation, therefore, is only as delineated in the Implementing Act, and does not extend to any portion of the river itself. (M)

Therefore, no one has a right to sustenance fishing in the Penobscot River, or anywhere else in the State of Maine outside the tribal reservations, including the Meduxnekeag River – and it would violate the Implementing Act to recognize such a right. Native Americans not only will not return to "historic consumption rates" outside the tribal reservations, but they are not permitted to do so pursuant to Maine law. Further, it would be impermissible for the DEP to establish state-wide numeric human health water quality criteria that are protective of a tribal sustenance fish consumption right that does not exist outside the tribal reservations. If the Penobscot Nation or the Passamaquoddy Tribe can demonstrate different fish consumption rates for waters within their reservations, however, it may be possible for the Tribes to meet the criteria in Chapter 584.3(B) for adoption of site-specific water body criteria. (M)

Response to Comments #5 and #6

The Department recognizes that there may be increased consumption rates as a result of subsistence fishing. The Department chooses not to substantially address comments made regarding the physical boundaries of the areas where sustenance fishing rights exist, the return to historic consumption rates in areas where sustenance fishing rights unquestionably exist, or other issues related to the Maine Indian Claims Settlement Act cited above, as these issues need not be addressed to establish protective AWQC. The Department's silence on these issues should not be construed as agreement with the commenters. Instead, the Department chooses to focus on the larger issues involved with establishing human health criteria for inorganic arsenic that will be appropriately protective of all Maine consumers, including high risk populations.

The Department offers one exception to the above note. Commenters have questioned whether tribal members require state fishing licenses and whether members may have been excluded from the ChemRisk survey. The extent of tribal or Maine Indian Tribal State Commission jurisdiction over water bodies within Indian territories is described in the Maine Indian Claims Settlement Act. 38 M.R.S.A. § 6207. The Penobscot Nation and Passamaquoddy Tribe have exclusive jurisdiction over fishing on any pond located wholly within Penobscot or Passamaquoddy territory which is less than 10 acres in size. 30 M.R.S.A. § 6207(1). The Maine Indian Tribal-State Commission has exclusive jurisdiction over fishing on any pond 10 or more acres in size if 50% or more of the linear shoreline is within Penobscot or Passamaquoddy territory, and in any section of a river or stream, both sides of which are in Indian territory or one side of which is within Penobscot or Passamaquoddy territory for a continuous length of ½ mile or more. 30 M.R.S.A. § 6207(3). The Maine Department of Inland Fisheries and Wildlife (MDIFW) indicates that tribal members do not require state fishing licenses for fishing in tribal waters, but do require state licenses when fishing in non-tribal waters. Where state licenses are required, the initial license is issued by the Tribe, whereas subsequent lifetime licenses are issued by MDIFW. The number of tribal waters in Maine is relatively small in comparison to all waters. It is possible that some individuals may have fished exclusively in tribal waters in 1989-1990, not required a state fishing license, and thus were not included in the population of license holders potentially surveyed. Although these individuals would be as valid as other anglers surveyed, the Department notes that such surveys typically only sample a cross-section of the population and do not include every possible individual.

As to concerns with the validity of the ChemRisk (1992) and Ebert (1993) study/reports, the Department provided information on the origin of Maine's fish consumption rate in its Response to Comments on its 2005 revisions to Maine Rule 06-096 CMR 584. "*ChemRisk* (Ebert et al) *conducted a mailed survey of 2,500 randomly selected Maine anglers for the 1989-1990 fishing season, obtaining responses from 1,612 anglers (64% response rate). From these data estimates have been obtained a 95th percentile fish intake value of 21 grams per day for all anglers, 26 grams per day for fish consuming anglers, and 51 grams per day for a subset of anglers of Native American heritage (N=148)*[1,2]. *These above estimates reflect consumption of recreationally caught fish from*

all waters." "These data have been reviewed by EPA and are listed as one of the key studies providing information on freshwater recreational fish consumption[3]."

[1]ChemRisk, 1992. Consumption of freshwater fish by Maine anglers. A Technical Report. Portland, ME. ChemRisk, a division of McLaren/Hart. Revised July 24, 1994.
[2]Ebert E, Harrington NW, Boyle KJ, Knight JW, Keenan RE, 1993. Estimating consumption of freshwater fish among Maine anglers. North American Journal of Fisheries Management, Vol. 13:737-745.
[3]USEPA, 1997. Exposure Factors Handbook. US Environmental Protection Agency, Office of Research and Development, Washington DC. EPA/600/P-95-002Fa.

Currently, Maine utilizes a fish consumption rate of 32.4 grams/day (the equivalent of one 8-ounce fish meal per week). This represents the 97th percentile for Maine recreational anglers for all waters, the 94th percentile for Native American anglers in Maine, and exceeds USEPA's current consumption rate of 17.5 grams/day that is based on the 90th percentile consumption rate for the US adult population (USEPA's AWQC Methodology Section 1.6) and USEPA's previous rate of 6.5 grams/day. Maine notes that, at this time, USEPA is still using the 6.5 gram/day consumption rate for calculating arsenic criteria. Using a cancer risk factor of 10E-6, Maine maintains that the 32.4 gram/day fish consumption rate is not only protective of the sensitive subpopulation of fish consuming recreational anglers, but is also protective of the higher-end sensitive subpopulation of native American recreational anglers based on the only empirical data of which Maine is aware (ChemRisk (1992), Ebert et al (1993)). The question remains as to whether this rate is adequately protective with the 10E-4 risk factor.

Though numerous commenters, including USEPA, criticize the ChemRisk 1992 (Ebert et al 1993) study, it is cited by USEPA in the 2011 Exposure Factors Handbook in both Section 10.10.3, *Recommendations – Recreational Freshwater Anglers,* and Section 10.10.4, *Recommendations – Native American Subsistence Populations*. As to its adequate representation of the Native American population, the ChemRisk study sampled 0.12% of the general population in Maine and approximately 1.9% of the Native American population in Maine. The ChemRisk study sampled 0.59% of the general population fishing license holders and 4.5% of the Native American lifetime fishing license holders on non-tribal lands based on current numbers. Therefore, contrary to assertions made by commenters, Native Americans in Maine were represented at a higher percentage than was the general population.

As noted by commenters, some fish consumption advisories were in place at the time of the ChemRisk survey. The first fish consumption advisories were due to dioxin in the Androscoggin River in 1985, the Kennebec River and Penobscot River in 1987, and the Presumpscot River and West Branch of the Sebasticook River in 1990. The 1990 advisory was subsequently revised and removed in 1992. Additional advisories have been established since the ChemRisk survey period, based on mercury, dioxin, DDT, and other contaminants. Additionally, public awareness of historical pollution in industrialized rivers can be expected to have suppressed fish consumption on a local basis. The Department is unable to quantify the extent of suppression due to historical pollution in the major rivers or the dioxin advisories in place at the time of the ChemRisk study, but believes that the ChemRisk (Ebert et al) estimates of fish consumption for

rivers and streams as well as the inclusive "all waters" category are likely to have been affected to some degree. The Department believes that this effect is likely similar in other studies of recreational and subsistence anglers that are used elsewhere and nevertheless considers the ChemRisk (Ebert et al) study to provide the best available Maine-based data.

The ChemRisk (1992) and Ebert et al (1993) study calculated Fish Consumption Rates by combining rates from all sources including rivers/streams, lakes/ponds, open water fishing, ice fishing, personally caught and gift fish. The Department has recently calculated the 99th percentile of this data to be 37.6 grams/day for lakes/ponds and 138 grams/day for all waters to represent the most highly exposed subpopulation. To meet the responsibility in USEPA's AWQC Methodology of ensuring criteria are "*adequately protective of the most highly exposed subpopulation*" with a change in the Cancer Risk Level noted above, the Department proposed to use the 138 gram/day (99th percentile) value as a revised state-wide fish consumption rate in calculation of inorganic arsenic AWQC. As this is local population-specific empirical data, it is a preferred value to the national default subsistence fishing consumption rate of 142.4 grams/day (also 99th percentile) according to EPA's AWQC Methodology (Sections 1.6, 2.6, 2.8.2). Further, as the ChemRisk (1992) and Ebert et al (1993) study is cited by EPA in the Exposure Factors Handbook in both Section 10.10.3. *Recommendations – Recreational Freshwater Anglers* and Section 10.10.4. *Recommendations – Native American Subsistence Populations*, Maine believes that the validity of the study and the protective nature of its revised fish consumption rate for sensitive subpopulations (138 grams/day) are demonstrated.

C. Inorganic Arsenic Portion of Total Arsenic (Inorganic Factor)
7. Comment:

Woodland Pulp LLC states that much of their arsenic discharges are of "organic" and not "inorganic" arsenic. Organic arsenic is universally accepted as not harmful to human health or the environment and is not regulated by the Department. Assumptions regarding the amount of inorganic arsenic (versus the harmless organic) in fish tissue are wildly off the mark. Although inorganic arsenic levels in fish tissue range only from 2-10%, the assumption is that 100% of arsenic in fish tissue is inorganic. This results in effluent limits "orders of magnitude lower than necessary to protect human health". Indeed, our arsenic limit of 0.35 ppb is just for the inorganic arsenic, with no limits on organic arsenic. The Department has used an assumption that 50% of a facility's arsenic discharges are organic. The ratios of inorganic to organic arsenic in our discharges vary widely, and with no obvious correlation to mill operations. As a result, there is a significant chance that the mill's organic arsenic discharges will be subject to its limit, even though there is no harm to human health or the environment from organic arsenic. The existing AWQC (IA) are based on flawed assumptions regarding the levels of inorganic arsenic that may exist in our environment without adversely impacting human health. The current risk level of 10E-6 in Chapter 584 assumes fish consumption

rates that are almost double the consumption rates used by U.S. EPA and an excessive bioaccumulation. (L)

FMC Corporation and The Arsenic Legislative Coalition state that on average, in freshwater fish only 10% of the arsenic is inorganic while in marine and estuarine fish only 2% is inorganic. (E)

Response to Comment #7:

Arsenic is widely present in the environment. It is found in our soils, water, and in the raw materials used by our manufacturers. In guidance developed following the 2005 rule revision, Maine noted a wide range of inorganic factors in the literature between 1% and 99% depending on the arsenic source represented. Maine settled on a rebuttable presumption of 50% inorganic/organic in total arsenic to be used in applying the established criteria through effluent limitations. At the suggestion of USEPA and from the example of other states and USEPA regions, Maine is proposing to establish an inorganic factor in AWQC (IA) calculations. The current literature discusses a range of 10-30% inorganic arsenic in total arsenic.

Of many available studies, Lorensana et al (2009 scholarly review) reports, "*Data from the worldwide literature indicate the percent of inorganic arsenic in marine/estuarine finfish does not exceed 7.3% and in shellfish can reach 25% in organisms from presumably uncontaminated areas, with few data available for freshwater organisms. However, percentages can be much higher in organisms from contaminated areas and in seaweed. US site-specific data for marine/estuarine finfish and shellfish are similar to the worldwide data, and for freshwater finfish indicate that the average percent inorganic arsenic is generally <10%, but ranges up to nearly 30%.*" "*Data for freshwater organisms from presumed or known contaminated US site assessments indicated that whereas average percent inorganic arsenic values were generally <10% for finfish, the percent inorganic arsenic values for individual samples or composites of a particular type of fish can vary widely from not detected to nearly 30%.*"

It is noted that there is variability even among USEPA Regions, with some using a 10% inorganic factor, while others use a 30% inorganic factor. Some species appear to consistently have low levels of inorganic arsenic. Aside from this, some figures at the lower end of the range in reviewed studies are actually based on average results, while the maximum amounts are observed to approach or exceed the upper end of the range depending on species, portions of the organisms analyzed, etc. As Maine typically seeks to be protective of human health and aquatic life at much higher than average levels (i.e. 95th percentile), the Department is recommending the more conservative 30% Inorganic Factor.

D. USEPA Comment Regarding Application of Maine Water Quality Standards.
8. Comment:

USEPA provided the following, which is essentially a repeat of a comment that it made for the 2005 Chapter 584 rulemaking, "*at present, note that Maine's state water quality standards are not applicable to waters of the federally recognized Tribes in Maine, because the State has not specifically applied to implement its water quality standards program in these territories and EPA has not made a specific finding that the State has jurisdiction to implement the water quality standards in Tribal waters. EPA is taking no position now on whether the State has adequate authority to implement its standards in Indian territories.*"

Response to Comment 8:

Maine provides the response that it provided in the 2005 proceedings, "*Maine submits its water quality standards to EPA for approval, pursuant to Section 303 of the federal CWA, to be applicable to all State waters. Until recently, EPA has never qualified its acknowledgments as applying only to certain State waters, nor indicated that such standards as applied to the waters of the federally recognized Tribes in Maine were inconsistent with the CWA or any other federal law. The Maine Implementing Act and federal Maine Indian Claims Settlement Act provide that except for certain internal tribal matters not applicable here, the Tribes, and the lands and natural resources owned by the Tribes, 'shall be subject to the laws of the State... to the same extent as any other person or lands or other natural resources therein.' The Department thus disagrees that 'Maine's state water quality standards are not applicable to the waters of the federally recognized Tribes in Maine.*'" That Maine's water quality standards apply statewide, including in Indian Territory and Indian Reservations, has since been confirmed by the U.S. Court of Appeals for the First Circuit in *Maine v. Johnson,* 498 F.3d 37 (1st Cir. 2007).

E. Explanation of the Revised AWQC (IA):

The initial proposed revisions to the AWQC for inorganic arsenic were prompted by the Maine Legislature (P.L. 2011, c.194, *An Act to Review State Water Quality Standards*) and were limited to the cancer risk factor. Based on comments received from USEPA and other commenters and to ensure adequate protection of the general population as well as highly exposed fish consuming subpopulations, the Department conducted a wider review of the factors used for establishing inorganic arsenic criteria in Maine, other states, and USEPA regions. The Department proposed revisions to several other relevant factors, which resulted in revised AWQC for inorganic arsenic. The revised criteria are less stringent than the initially proposed criteria. However, the process utilized is considered by USEPA to be more transparent and more protective of sensitive subpopulations at the 10E-4 cancer risk level. This process has been used by other states, such as Oregon, and approved by USEPA. The factors used to arrive at the revised AWQC (IA) are described below.

Chapter 584 Inorganic Arsenic AWQC for Human Health

Parameter	2005 (previous) rule	Initial proposed rule	Adopted 2012 rule
Cancer Risk Level	1.00E-06	1.00E-04	1.00E-04
Body Weight	70 kg	70 kg	70 kg
Cancer Potency Factor	1.75 mg/kg/day	1.75 mg/kg/day	1.75 mg/kg/day
Water Consumption	2 L/day	2 L/day	2 L/day
Bioconcentration Factor	44 L/kg	44 L/kg	26 L/kg
Fish Consumption Rate	32.4 g/day	32.4 g/day	138 g/day
Inorganic Factor	50% rebuttable presumption in limits	50% rebuttable presumption in limits	30%
Criteria			
Human Health: Water and Organisms	0.012 ug/L	1.2 ug/L	1.3 ug/L
Human Health: Organisms only	0.028 ug/L	2.8 ug/L	3.7 ug/L

Cancer Risk Level: Indicated change pursuant to PL 2011, c.194, *An Act to Review State Water Quality Standards* (codified at 38 M.R.S.A. § 420(2)(J)).
Body Weight: No change is made to the standard subject body weight of 70 kg.
Cancer Potency (Slope) Factor: The 1.75 mg/kg/day is the current USEPA value, promulgated in the National Toxics Rule (1992). In 1998, USEPA established a value of 1.5 mg/kg/day in the Integrated Risk Information System (IRIS) database, however the national criteria was not revised and the 1992 value remains in effect. Both 1.75 mg/kg/day and 1.5 mg/kg/day are based on arsenic effects in skin cancer. The Science Advisory Board and National Research Council now recommend a draft potency factor of 25.7 mg/kg/day based on cancers in internal organs such as the bladder and lungs as more applicable to arsenic consumption. But, this value has not been formally adopted and USEPA advises it can not be used at this time. A date has not been provided for adoption of a revised Cancer Potency Factor. Some states and USEPA regions have utilized the 1998 IRIS factor of 1.5 mg/kg/day, though it was not formally adopted by USEPA. Based on the expectation that a revised factor may be greater than the existing factor, the Department chooses to continue to use USEPA's adopted 1992 value of 1.75 mg/kg/day and not to incorporate the less stringent, 1998 IRIS factor.
Water Consumption: No change is made to the standard water consumption rate of 2L/day.
Bioconcentration Factor (BCF): The 44L/kg value is the current BCF for USEPA (*Ambient Water Quality Criteria for Arsenic, 1984*) and Maine (2005). It is based on a limited data set of studies for two species: eastern oyster (1982) and bluegill (1980). A more recent analysis by USEPA calculated the proposed 26 L/kg value from the geometric mean of the previous studies and three additional studies on rainbow trout (1994). The revised BCF of 26 L/kg was approved by USEPA for marine waters in Oregon (2011) and USEPA HQ has recommended it for use in Maine waters statewide.

Fish Consumption Rate (FCR): As noted above, the Department is proposing to revise the FCR used in calculating AWQC for inorganic arsenic from the current 32.4 g/day to 138 g/day. This value will be protective of 99% of the high end fish consuming, Native American sensitive subpopulation in Maine pursuant to the ChemRisk (1992) and Ebert et al (1993) study.
Inorganic Factor: As noted above, the Department is applying a 30% inorganic factor (IF) in calculating AWQC for inorganic arsenic, representative of estimates of the percentage of inorganic arsenic in total arsenic. Previously, the Department did not specify an IF in calculation of AWQC (IA). However, the percent inorganic was addressed in calculation of effluent limitations for arsenic. By default, the AWQC (IA) assumed 100% inorganic arsenic. But, during limit calculations, the Department applied a rebuttable presumption of 50% inorganic arsenic, representative of the variability in previous estimates of the percent inorganic.
AWQC (IA): The described values result in Ambient Water Quality Human Health consumption of water and organisms (freshwater) criteria of 1.3 ug/L and Human Health consumption of organisms only (marine water) criteria of 3.7 ug/L.

2. SECOND PUBLIC COMMENT PERIOD MARCH 14, 2012 – APRIL 13, 2012.

During the public comment period for the revised proposed rule, the Department received comments from three parties, focused primarily along the following themes.

A. The proposed rule is still very conservative

1. Comment:

The Maine Rural Water Association (MRWA) stated, the proposed rules are still overly conservative and are stricter than the majority of other states. Even though these proposals are decreasing the burden they are still too restrictive. Some areas of the State with high natural levels of arsenic will continue to find compliance with the proposed revised criteria to be a challenge particularly if their drinking water or an industry impacted by soil arsenic concentrations such as potato, landfill leachate, paper, wood products, fish or marine products discharges to the treatment plant. (O)

The Arsenic Legislation Coalition (ALC) supports the proposed changes in the AWQC for inorganic arsenic because, as it described in its earlier comments, they will not cause increased exposures to inorganic arsenic and, thus will be health protective for all Maine residents. Each of the revised factors can be shown to be very conservative. (P)

The City of Rockland Pollution Control Facility stated, when the legislature passed LD 515, An Act to Review State Water Quality Standards, it was recognized that the current Chapter 584 arsenic AWQC was unnecessarily stringent. The least complex method to address this issue was to modify the Cancer Risk Level, leaving all other parameters unchanged. The revised criteria will continue to put an unnecessary burden on municipalities and industries in Maine. The City of Rockland appreciates and supports Maine DEP efforts in proposing important modifications to the Chapter 584 arsenic AWQS. However, the City does not support the revised modifications to the Fish Consumption Rate, Bioconcentration Factor and Inorganic Factor. The City continues to support the initial proposed rule, and will only support parameter modifications that are protective without being overly stringent. (Q)

Response to Comment #1

The Department's initial proposed ambient water quality (human health) criteria for inorganic arsenic (AWQC(IA)) proposed to change the acceptable cancer risk factor from 1 case per 1 million people (10E-6) to 1 case per 10,000 people (10E-4) as mandated by P.L. 2011, c. 194, but did not propose to revise any of the other parameters used in calculating AWQC(IA). In its comments, USEPA noted that well sampling programs conducted in Maine in 1999/2000 and 2006/2007 indicate that a significant portion of Maine residents are already exposed to elevated arsenic due to high concentrations of arsenic in private drinking water wells. Whereas prior arsenic toxicity information was based on risks of skin cancer, more recent studies indicate risks of internal cancers as well. Based on this and other issues noted above, USEPA determined that the Department's initial proposed revised human health criteria for inorganic arsenic were not sufficient to ensure that sensitive subpopulations would not be exposed to a cancer risk from inorganic arsenic exposure greater than one case per ten thousand people (10E-4), and thus would not be adequately protective of sensitive subpopulations. (Comment 1.A.1, Opposed) This prompted the Department to review methodologies used for establishing inorganic arsenic criteria in other states and USEPA regions and propose revised criteria that would be adequately protective of sensitive subpopulations. The result is a process in which several underlying parameters involved in the calculation of AWQC(IA) were evaluated and revised, resulting in a more transparent process that the Department believes is based on appropriate science and policy. As noted above, in addition to the change in cancer risk factor mandated by P.L. 2011, c. 194, revisions were made in the statewide fish consumption rate, bioconcentration factor, and percent inorganic factor used in calculating AWQC(IA). A discussion of the basis for each of the revised parameters is included in 1.E above. Interestingly, though not the intention of the review, in this reevaluation process the proposed criteria became less stringent. The previous AWQC(IA) were 0.012 ug/L for consumption of water and organisms (HHWO) and 0.028 ug/L for consumption of organisms (HHO) only. The initially proposed criteria were 1.2 ug/L (HHWO) and 2.8 (HHO). The revised criteria are 1.3 ug/L (HHWO) and 3.7 ug/L (HHO). The Department believes the revised proposed criteria are attainable and afford protection of Maine citizens and therefore stands by the revised criteria.

B. Revision to Fish Consumption Rate

2. Comment

One of the revised parameters upon which the revised AWQC(IA) is based is the fish consumption rate. Commenters expressed concern with the revision from 32.4 g/day to 138 g/day.

The City of Rockland Pollution Control Facility supported the initially proposed rule that leaves the current Fish Consumption Rate at 32.4 g/day. The revised criteria are based on an increased Fish Consumption Rate of 138 g/day. On reviewing EPA Exposure Factors Handbook, EPA/600/R-09/052F, September 2011, Table 10-5, it is apparent fish consumption rates are highly variable across the county. Given this significant variability, the Fish Consumption Rate within the Exposure Factors Handbook Table 10-5 Summary ranges for Statewide Surveys, which include data from Maine based consumption studies (i.e. 5-51 g/day) should be considered. (Q)

The MRWA states, Maine wants to follow Oregon with a much higher fish consumption rate value of 138 g/day, but only consider it for the arsenic calculation. We are strongly opposed to increasing fish consumption values as this will lead to the argument that why is Maine using increased fish consumption for arsenic but not for other pollutants such as copper, lead, zinc and organics? Opening the door to the argument that an increased fish consumption value should be used in all toxics since it is agreed that there is a population in Maine that depends on subsistence fishing would greatly burden small communities by requiring tertiary treatment to meet much tighter water quality criteria. (O)

The majority of highly exposed fish consuming subpopulations exist in limited areas of the State. The MRWA submits that Maine should consider site specific criteria for areas separately than the remainder of the State. The majority of the subpopulations which consume more fish are consuming more freshwater fish. Different areas in Maine have differing naturally occurring levels of arsenic in the water. Since there is significant variation throughout the state, criteria should be evaluated based on site specific criteria in order to be truly science based. The fish consumption rate should only be applicable to those regions that there is a subpopulation that exists based on subsistence fishing. (O)

The MRWA believes the State also should determine the fish consumption rate in those subpopulations in Maine and not base it on other states ethnic practices. If Maine proposes to follow Oregon in increasing the fish consumption rate value used in the toxics calculation and continue to remain so conservative with all the factors allowable, we submit that there should be variances allowed for naturally occurring background concentrations in the permitting process. (O)

Response to Comment #2

Maine is using a higher fish consumption rate for use in calculating AWQC(IA) to ensure protection of sensitive subpopulations, as is required by USEPA's AWQC Methodology. This action is not taken with an intent to follow any other state and it specifically utilizes Maine data. As noted above in the Response to Comments #1.B.5 and #1.B.6, Maine's previous statewide fish consumption rate of 32.4 grams/day represents the 97th percentile for Maine recreational anglers for all waters and the 94th percentile for Native American anglers in Maine. Using a cancer risk factor of 10E-6, Maine maintained that the 32.4 gram/day fish consumption rate is not only protective of the sensitive subpopulation of fish consuming recreational anglers, but is also protective of the higher-end sensitive subpopulation of native American recreational anglers based on the only empirical data of which Maine is aware (ChemRisk (1992), Ebert et al (1993)). The question remained as to whether this rate was adequately protective with the 10E-4 risk factor.

USEPA determined that the Department's initially proposed revised AWQC(IA), in which only a change in the cancer risk factor was proposed, were not sufficient to ensure that sensitive subpopulations would not be exposed to a cancer risk from arsenic exposure greater than one case per ten thousand people (10E-4), and thus would not be adequately protective of sensitive subpopulations. (Comment 1.A.1, Opposed).

To meet the responsibility in USEPA's AWQC Methodology of ensuring criteria are "*adequately protective of the most highly exposed subpopulation*" with a change in the Cancer Risk Level noted above, the Department is using the 138 gram/day (99th percentile) value for Native American anglers in Maine as a new state-wide fish consumption rate in calculation of inorganic arsenic AWQC. As this is local population-specific empirical data, it is a preferred value to the national default subsistence fishing consumption rate of 142.4 grams/day (also 99th percentile) according to EPA's AWQC Methodology (Sections 1.6, 2.6, 2.8.2). Further, as the ChemRisk (1992) and Ebert et al (1993) study is cited by EPA in the Exposure Factors Handbook in both Section 10.10.3. *Recommendations – Recreational Freshwater Anglers* and Section 10.10.4. *Recommendations – Native American Subsistence Populations*, Maine believes that the validity of the study and the protective nature of its revised fish consumption rate for sensitive subpopulations (138 grams/day) are demonstrated.

The revision to the statewide fish consumption rate used in calculating AWQC(IA) only applies to calculation of criteria for inorganic arsenic. All other criteria except for inorganic arsenic are still calculated based on a cancer risk factor of 10E-6 and thus do not require a change in the fish consumption rate in order to be protective of the most sensitive subpopulation.

As noted above (Comment #1.B.3: Opposed), in its initial proposed rule, the Department referenced additional protections provided in the existing rule (06-096 CMR 584.3.B(2)) through the ability for parties to request establishment of site specific human health criteria. As noted in the same section, USEPA determined that this opportunity alone did not adequately address its concerns with protection of sensitive subpopulations. It was determined that a new statewide fish consumption rate was required. However, the existing rule section cited is still available if it is determined that some areas require a greater rate in order to ensure adequate protections.

The Department notes that the commenter's suggestion to consider background concentrations is already provided for in Department rule 06-096 CMR 530, Surface Water Toxics Control Program, Section 4.C Background concentrations.

The Department believes the revised proposed statewide fish consumption rate is appropriate for inorganic arsenic and therefore stands by the revised proposed criteria.

C. Inorganic Factor

3. Comment

One of the revised parameters upon which the AWQC(IA) is based is an Inorganic Factor (IF). Commenters expressed concern with the revision to utilize a 30% IF, suggesting a lower IF instead.

The ALC restated previous comments that "*most arsenic in fish is in the form of organic compounds that are much less toxic than inorganic arsenic. On average in freshwater fish, less than 10% of the arsenic is inorganic, while in marine and estuarine fish, only 2% is inorganic (Schoof and Yager 2007). As noted by Schoof and Yager (2007), in freshwater finfish, the mean inorganic arsenic fraction was 7.2%, the 75th percentile was 10% and the 90th percentile was 16%. Maine DEP has selected a maximum value to represent the inorganic arsenic fraction, but fish consumers will be exposed to various kinds of fish from various sources over their lifetime, so use of a value close to a maximum will yield substantial overestimates of potential exposure to inorganic arsenic.*" (P)

The MRWA is supportive of the changes to the criteria that have made them less strict, but feels they are still overly conservative and would encourage using a lower inorganic fraction for the calculation of the criteria of 10% rather than 30% which is overly conservative. (O)

The City of Rockland Pollution Control Facility states, if the Inorganic Arsenic Factor is to be modified, a representative factor should be established. An inorganic factor of 10% would be more representative of actual freshwater fish concentrations and overly protective in the case of marine fish. (Q)

Response to Comment #3

As noted in Response to Comment #1.C.7 above, the current literature discusses a range of 10-30% inorganic arsenic in total arsenic. It is noted that there is variability even among USEPA Regions, with some using a 10% inorganic factor, while others use a 30% inorganic factor. Some species appear to consistently have low levels of inorganic arsenic. Aside from this, some figures at the lower end of the range in reviewed studies are actually based on average results, while the maximum amounts are observed to approach or exceed the upper end of the range depending on species, portions of the organisms analyzed, etc. As Maine typically seeks to be protective of human health and aquatic life at much higher than average levels (i.e. 95th percentile), the Department stands by its use of the more conservative 30% Inorganic Factor. However, the Department does not rule out reconsideration of any of the parameters utilized in calculating the AWQC(IA) as additional information becomes available and as appropriate.

D. Bioconcentration Factor

4. Comment

One of the revised parameters upon which the AWQC(IA) is based is the Bioconcentration Factor (BCF). Commenters expressed concern with the proposed revision from 44 L/kg to 26 L/kg, suggesting a lower BCF instead.

The ALC comments that the consumption-weighted BCF was intended for broad application to freshwater and estuarine environments, but that current consumption patterns suggest that the BCF should be even lower than proposed. (P).

The City of Rockland Pollution Control Facility comments that, based on available fish consumption data, 26 L/kg is overly stringent as well. (Q)

Response to Comment #4

As noted above in Section 1.E. Explanation of the Revised AWQC (IA), Bioconcentration Factor, the previous BCF of 44 L/kg for inorganic arsenic is based on a limited data set of studies. The revised BCF of 26 L/kg was calculated by USEPA in a recent analysis of three additional studies. USEPA recommended that the 26 L/kg BCF be utilized statewide in Maine. The Department believes the revised proposed statewide BCF is appropriate for inorganic arsenic and therefore stands by the 2012 revised criteria.

E. Summary Statements

5. Comment

The ALC states, the revised inorganic arsenic criteria are protective of human health and are more stringent than criteria approved by most other states. The criteria are also consistent with USEPA methodologies and guidelines for developing human health criteria and, as long as there are no increases above natural levels, will not lead to increased exposure to arsenic for Maine residents. Even high fish consumers will be protected because both the assumed fish consumption rate has been increased and because the arsenic concentrations in fish will not change. Furthermore, less than 10% of arsenic in fish is inorganic arsenic, providing a greater than three-fold protective factor for the revised AWQC. Based on these findings, the ALC urges the Maine DEP to adopt the inorganic arsenic AWQC as revised. (P)

Response to Comment #5

The Department offers no response.

EXHIBIT
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Notice of Agency Rule-making Proposal

AGENCY: DEPARTMENT OF ENVIRONMENTAL PROTECTION

CHAPTER NUMBER AND TITLE: 06-096 CMR 584, Surface Water Quality Criteria for Toxic Pollutants

PROPOSED RULE NUMBER (*leave blank; assigned by Secretary of State*):

CONTACT PERSON FOR THIS FILING:
Robert D. Stratton
Maine Department of Environmental Protection
17 State House Station
Augusta, Me 04330-0017
Tel: (207) 215-1579
Fax: (207) 287-3435
Robert.D.Stratton@Maine.Gov

CONTACT PERSON FOR SMALL BUSINESS INFORMATION (if different):

PUBLIC HEARING (if any): November 1, 2011, 9:30 am, MEDEP Response Services Training Room, 4 Blossom Lane, Augusta, ME 04330

COMMENT DEADLINE: December 1, 2011

BRIEF *SUMMARY: The surface waters of the State are managed to prevent contamination from toxic pollutants in toxic amounts in order to meet the goals of the Clean Water Act and Maine's water quality standards. Toxic compounds may not be discharged in amounts that may cause toxic impacts on aquatic organisms or affect human health. This rule revision changes the cancer risk level for inorganic arsenic used in calculating ambient water quality (human health) criteria and establishes revised inorganic arsenic criteria accordingly. Further, this revision updates Maine's ambient water quality and human health criteria for pollutants for which USEPA has updated criteria since Maine's last revision in 2005, using Maine-specific parameters where applicable.

IMPACT ON MUNICIPALITIES OR COUNTIES (if any) This rule revision will benefit municipalities that operate affected Publicly Owned (wastewater) Treatment Works (POTWs) by eliminating criteria for arsenic that is believed to be unattainable and establishing new arsenic criteria still within USEPA guidelines. Further, it will benefit affected municipalities by ensuring that the Department utilizes the most current criteria.

STATUTORY AUTHORITY FOR THIS RULE: 38 MRSA, 341-H, 420, and 464

SUBSTANTIVE STATE OR FEDERAL LAW BEING IMPLEMENTED (if different):

E-MAIL FOR OVERALL AGENCY RULE-MAKING LIAISON: Mike.Karagiannes@maine.gov

* *Check one of the following two boxes.*

X *The above summary is for use in both the newspaper and website notices.*

☐ *The above summary is for the newspaper notice only. A more detailed summary / basis statement is attached.*

Rule-Making Fact Sheet

(5 MRSA §8057-A)

AGENCY: DEPARTMENT OF ENVIRONMENTAL PROTECTION

NAME, ADDRESS, PHONE NUMBER OF AGENCY CONTACT PERSON:

Robert D. Stratton
Maine Department of Environmental Protection
17 State House Station
Augusta, Me 04330-0017
Tel: (207) 215-1579
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Robert.D.Stratton@Maine.Gov

CHAPTER NUMBER AND RULE TITLE: 06-096 CMR 584, Surface Water Quality Criteria for Toxic Pollutants

STATUTORY AUTHORITY: 38 MRSA, 341-H, 420, and 464

DATE AND PLACE OF PUBLIC HEARING: November 1, 2011, 9:30 am, MEDEP Response Services Training Room, 4 Blossom Lane, Augusta, ME 04330

COMMENT DEADLINE: December 1, 2011

PRINCIPAL REASON OR PURPOSE FOR PROPOSING THIS RULE:

This rule revision was initiated pursuant to P.L. 2011, c. 194 (LD 515), *An Act to Review State Water Quality Standards,* and at the request of the Joint Standing Committee on Environment and Natural Resources. This rule revision changes the cancer risk level for inorganic arsenic used in calculating ambient water quality (human health) criteria and establishes revised inorganic arsenic criteria accordingly. Further, this revision updates Maine's ambient water quality and human health criteria for pollutants for which USEPA has updated criteria since Maine's last revision in 2005, using Maine-specific parameters where applicable.

ANALYSIS AND EXPECTED OPERATION OF THE RULE:

This action revises an existing Maine rule (06-096 CMR 584, effective date October 9, 2005) with an original effective date of May 17, 1993. The original rule was established in response to amendments to the Federal Clean Water Act in 1987 and amendments to 38 MRSA, Section 420 enacted in 1991, both of which required Maine to develop comprehensive rules dealing with toxic pollutants in licensed wastewater discharges. The Department established and has managed a surface waters toxics control program since the effective date of the original rule. The Department anticipates that the revised rule will operate successfully within the Department's existing program.

FISCAL IMPACT OF THE RULE:

A Cost Benefit Analysis has been determined unnecessary at this time. This rule revision is anticipated to result in no increased costs to the regulated community and no appreciable increased costs to the Department. It is mandated by law and may result in less regulatory burdens on the regulated community.

Rule-Making Cover Sheet

2012-211

EXHIBIT 10

TO: Secretary of State
ATTN: Administrative Procedure Officer,
State House Station 101, Augusta, Maine 04333.

1. Agency: DEPARTMENT OF ENVIRONMENTAL PROTECTION

2. Agency umbrella and unit number: 06-096
(2 digit umbrella # and 3 digit unit #)

3. Title of rule: Surface Water Quality Criteria for Toxic Pollutants

4. Chapter number assigned to the rule CMR 584
(must be 3 digits or less)

FILING
JUL 24 2012
SECRETARY OF STATE

5. Date(s)/method(s) of notice: Published rulemaking advertisements: September 16, 2011 (Clean Water Act); October 12, 2011 (APA); March 14, 2012 (APA, second comment period)

6. Date(s)/place(s) of hearing(s): November 1, 2011, 9:30 am, MEDEP Response Services Training Room, 4 Blossom Lane, Augusta, ME 04330

7. Type: ☐ new rule ☒ partial amendment(s) of existing rule

☐ suspension of existing rule ☐ repeal of rule ☐ emergency rule

☐ repeal and replace: complete replacement of existing chapter, with former version simultaneously repealed.

8. Name/phone of agency contact person: Robert D. Stratton, (207) 215-1579

9. If a major substantive rule under Title 5, c. 375, sub-CII-A, check one of the following

☐ Provisional adoption (prior to Legislative review) ☐ Final adoption
☐ emergency adoption of major-substantive rule

10. Certification Statement: I, Patricia W. Aho hereby certify that the attached is a true copy of the rule(s) described above and lawfully adopted by The Maine Department of Environmental Protection (name of agency) on July 13, 2012 (date).

I further certify that all portions of this rule are adopted in compliance with the requirements of the Maine Administrative Procedure Act.

Signature: Patricia W. Aho
(original signature, personally signed by the head of agency)

Printed name & title: Patricia W. Aho

11. Approved as to form and legality by the Attorney General on July 16, 2012 (date)

Signature: Janet M. McClintock
(original signature, personally signed by an Assistant Attorney General)

Printed Name: Janet M. McClintock, Assistant Attorney General

RECEIVED
JUL 24 2012
OFFICE OF THE SECRETARY OF STATE
AUGUSTA, MAINE

EFFECTIVE DATE: JUL 29 2012